Continued translation.

[0061] Next, explanation is added per reduction technique of the memory space of a ** table. It becomes reducible [the memory space which should be held] by creating a conversion array common to all the items also by the ** table side. Drawing 31 is a flow chart which shows processing of the conversion array creation by the side of a ** record. Processing of Step 3101 or Step 3103 is similar with processing of Steps 2701 to 2703 of drawing 27 . The inside of the pointer to the value list of information blocks shared more by details at the main table side about a certain record number by the side of the main table, It is referred to by the pointer value of the position (line) corresponding to the record number concerned (Step 3102), and subsequently The number of accumulating totals and starting position corresponding to this pointer value are pinpointed, and the range in which the corresponding record number is stored is specified in a set (sorting array) of the record number after sorting by computing the difference of a starting position and the number of accumulating totals (Step 3103). Then, the specified record number is stored one by one during a conversion array.

[0062] Drawing 32 is the figure showing an example of the conversion array creation by the side of a ** table. In drawing 32 (a), the pointer value "0" to which the shared information block of a "fan" corresponds is referred to corresponding to the record number "0" of the main table. Since the difference of the starting position of a position (the 1st line) and the number of accumulating totals to which the information block of the "professional baseball team" to whom sorting application was performed in the ** block side corresponds is "2", In a set (sorting array) of the record number after sorting, two record numbers "1" and "3" can understand it as the thing relevant to the record number "0" of the above-mentioned main table from a head. Therefore, the value of "1" and "3" is stored in a conversion array from a head. Similarly in drawing 32 (b), the starting position "4" and the number of accumulating totals "3" of a position (the 3rd line) to which the information block of a "professional baseball team" corresponds are specified based on the pointer value "2" of the information block of a "fan" referred to corresponding to the record number "1" of the main table. Since these differences are "1", in a sorting array, he can understand that the record number "0" of "1" ** is a record number corresponding to the record number "1" of the main table from the position (the 4th line) shown with the number of accumulating totals "3." Therefore, a record number "0" is stored in the field which follows the field stored about the main record number "0" in the conversion array shown in above-mentioned drawing 32 (a). By repeating such processing, it becomes possible to obtain a conversion array common to a ** table. Drawing 33 is a figure which illustrates the procedure of obtaining the information block of an imagination "game day" based on the conversion array by the side of the ** table obtained by the processing mentioned above. The imagination information block which can be used in the joined table (view) can be created by passing through the pointer value to which it corresponds under pointer array to the value list from the value under conversion array to drawing 33 so that it may be shown. What is necessary is just to generate this imagination information block like the explanation about the main table at every creation of a table (view). That is, if only the conversion array is made, according to the table (view) which should be created, it will become possible to generate an imagination information block like a request.

[0063] In addition, you may make either the conversion array by the side of the main table, or the conversion array by the side of a ** table. For example, when memory space increases only about the one of table side, you may make a conversion array only about one table side. Of course, it cannot be overemphasized that the conversion array about both tables may be created. Moreover, it is possible for search and sorting to use the same technique as the form of the 4th operation also with the form of this operation. According to the form of this operation, in the type of "**:**", it becomes possible by holding every one conversion array on the main table and/or a ** table to obtain the table (view) joined without newly creating an information block. Therefore, it becomes possible to reduce required memory space.

[0064] Next, explanation is added per form of operation of the 6th of this invention. In the form of the 4th and the 5th operation, although the value list was shared about the single item (information block) in the main table and a ** table, the join of two or more items is realized in the form of the 6th operation. For example, two tables (a name-of-a-person table and age table) as shown in drawing 34 (a) and (b) are considered. First, if its attention is paid to a name-of-a-person table, the item of a "member family name" and the item of a "member name" can be found out. The item of [if its attention is paid to an age table on the other hand] "a year and a member family name", the item of "a year and a member name", and the item of "age" can be found out. Therefore, in order to create a table (view) called the name-of-a-person age view including a name of a person and age, while joining a "member family name" and "a year and a member family name", it is necessary to join a "member name" and "a year and a member name" (refer to drawing 34 (c)). In addition, in the above-mentioned example, the sequence of an item shall be maintained in the name-of-a-person table (main table).

[0065] Explanation is added to below per [which creates the table (view) which joined two or more items which were mentioned above] technique. Drawing 35 is a flow chart which shows processing concerning the form of the 6th operation. As shown in drawing 35 , processing of sharing is first performed about all the value lists which should be shared (Step 3501). Each sharing corresponds to the processing shown in drawing 11 . [the example shown in drawing

34] while the value list of [in the information block of the "member family name" in a name-of-a-person table] and the value list of [in the information block of "the year and member family name" in an age table] are shared The value list of [in the information block of the "member name" in a name-of-a-person table] and the value list of [in the information block of "the year and member family name" in an age table] are shared (refer to drawing 36). Subsequently, when obtaining the joined table (view) about the main table, the pointer array to the value list of imagination which combined the required item is created (Step 3502). For example, the number of the shared tables is two, and when the item value of the "p" individual is stored in the value list of one of these and the item value of the "q" individual is stored in the value list of another side, the value list with the item value of the "pxq" individual of imagination can be considered as such combination. The number of the record numbers of the main table and the pointer value of the same number are stored in the pointer array to the value list actually created on the other hand.

[0066] The pointer value Pmi (0 <=i<=p-1, p: the number of the item values in one value list) of "i" watch is computed more by details as follows. It will be obtained by (1) type if pointer value of eye "i" watch is set to Pm2i for the pointer value of eye "i" watch during the pointer array to a value list about the information block of Pm1i and another side during the pointer array to a value list about one information block of the item which should be joined.

Pointer value Pmi=Pm1 i*q+Pm 2i .... (1)

(q: The number of the item values in the value list of another side)

Moreover, when obtaining the joined table (view) about a ** table, the pointer array to the value list of imagination which combined the required item is created (Step 3503). The number of the record numbers of a ** table and the pointer value of the same number are stored in this pointer array. The pointer value Psj (0 <=j<=p-1, p: the number of the item values in one value list) of "j" watch as well as the pointer value about the above-mentioned main table is computed. That is, it will be obtained by (2) types if pointer value of eye "j" watch is set to Ps2j for the pointer value of eye "j" watch during the pointer array to a value list about the information block of Ps1j and another side during the pointer array to a value list about one information block of the item which should be joined.

Pointer value Psj=Ps1 j*q+Ps 2j .... (2)

(q: The number of the item values in the value list of another side)

In addition, when the number of the items which should be joined is three, the pointer value Pmi (0 <=i<=p-1, p: the number of the item values in which value list) of "i" watch can be calculated according to (3) types.

Pointer value Pmi=Pm1 i*q+Pm2 i*r+Pm 3i -- (3)

In addition, Pm1i about the 1st information block here among the items which should be joined [the pointer value of eye "i" watch, and Pm2i] during the pointer array to a value list The pointer value of eye "i" watch and Pm3i are the pointer value of eye "i" watch about the 3rd information block during the pointer array to a value list about the 2nd information block, and "q" is the number of the number of the item values in the 2nd value list, and item values [in / in "r" / the 3rd value list]. Also when an item is four or more, it cannot be overemphasized that pointer value can be calculated by the same technique.

[0067] Drawing 37 is a figure which illustrates the pointer array to the value list to the value list of imagination about the above-mentioned name-of-a-person table and an age table. In the "name-of-a-person table" which is the main table if its attention is paid to the information block of a "member family name" the pointer value (namely, the 1st line) corresponding to a record number "0" is "1" during the pointer array to a value list -- the -- on the other hand, when its attention is paid to the information block of a "member name", the pointer value of the 1st line is "0" during the pointer array to a value list. Therefore, in the pointer array to the value list of imagination, the pointer value (namely, the 1st line) corresponding to a record number "0" is set to 1*q(here 4)+0=4. Moreover, in the pointer array to the value list of imagination, corresponding pointer value is set to 0*4+3=3 about a record number "1."

[0068] Here explains below per meaning of the pointer value in the pointer array to the value list of the above-mentioned imagination. In the above-mentioned example, in the "name-of-a-person table", several p of the pointer value about the information block of a "member family name" was 3, and several q of the pointer value about the information block of a "member name" was 4. When its attention is paid to a record number "0", the pointer value in the pointer array to the value list of imagination is "4." Since this value is "4/q=4/4=1", if the value list of information blocks of a "member family name" is referred to, it can understand that it is the "Suzuki" family name. Moreover, since it is "4mod(q) =4mod4=0", if the value list of information blocks of a "member name" is referred to, he can understand that a name is "Ichiro." Moreover, when its attention is paid to a record number "1" and "2", respectively, the pointer value in the pointer array to the value list of imagination is "3" and "5." Since these values are "3/q=3/4=0" and "5/q=5/4=1", if the value list of information blocks of a "member family name" is referred to, they can understand that they are the "Sato" family name and the "Suzuki" family name, respectively. Moreover, since it is "3mod(q) =3mod4=3" and "5mod(q) =5mod4=1", if the value list of information blocks of a "member name" is referred to, it can understand that each name is "YOSAKU" and "large **", respectively (refer to drawing 38). The pointer value under pointer array to the value list of imagination is acquired by the same technique also about the "age table" which is a ** table. The meaning which the pointer value under obtained pointer array has is the same as that of the thing of the main table (refer to drawing 39).

[0069] By processing of Step 3502 and Step 3503, two or more items can be considered to be a single item the same way. Therefore, in the information block of a ** table, using the pointer array to the value list of imagination, the pointer value of the pointer array to a record number

is generated, and these are stored in a predetermined position (Step 3504). This technique is the same as that of what was used at Step 1105 of drawing 11 . If it explains again, in the imagination information block of a ** table, the array of the same size as the value list of imagination will be prepared first. Subsequently, pointer value is scanned from the head of the pointer array to a value list, and when the pointer value of eye "i" watch is "j", in the prepared array, processing which stores a value "i" is performed as an element of eye "j" watch.
[0070] In drawing 40 , each pointer value stored in the pointer array (refer to Step 3503) to the value list of [in the imagination information block "a year, member family name + year, and member name" including the imagination value list obtained by sharing] is referred to about the "age table" which is a ** table. For example, since the pointer value corresponding to a record number "0" is "3", a record number "0" is stored in a corresponding position (the 4th line) in the pointer array to a record number. Thus, after the pointer array to a record number is made, the joined table (view) is obtained (Step 3505). The pointer value under pointer array to the value list which should take out the item value in the information block of the main table by the record number of the main table is specified more as details. Moreover, with reference to the pointer value under pointer array to the value list in the information block including the value list of imagination, the pointer value to the record number obtained at Step 3504 is specified based on this pointer value. Since the record number shown with this pointer value is the thing of a ** table, in the information block including the value list equipped with the item which should be displayed, the pointer value of a corresponding position is found out and, thereby, the item value under value list is specified.
[0071] In drawing 41 , an item value (for example, "Suzuki" and "Ichiro") is acquired from the value list of [in the information block of the "member family name" in the main table from the record number (for example, "0") of the main table, and the information block of a "member name"]. The corresponding pointer value (for example, "4") in the pointer array to the value list of information blocks of the "member family name + member name" which, on the other hand, includes the value list of imagination from the above-mentioned record number is acquired, and, thereby, the record number (for example, "1") of a ** table is found out. Therefore, it becomes possible to take out a corresponding item value (for example, "22") from the value list of information blocks of "age" which have the item in a ** table which should be displayed.
[0072] In order to deal with two or more items which should be joined as a single item according to the form of this operation, the information block in the state where two or more items were combined is formed, and a required record number and pointer value are specified using the pointer array corresponding to the imagination item value which can be taken in this information block. moreover, the above -- only the pointer array for specifying the item value under this value list is created, without actually making the value list including an imagination item value. For example, when the item values of two items are "p" and "q", if they create the

pointer array to the record number of the size of "pxq", it is sufficient for them, respectively. Therefore, the join of two or more items can be realized, without creating the value list of an immense quantity equipped with the actually combined item value.

[0073] Next, explanation is added per form of operation of the 7th of this invention. With the form of implementation of the above 6th, the information block in the state where two or more items were combined was created, and the pointer array to the record number was created about this information block. However, when the item value of the two above-mentioned items is set to "p" and "q", and each is very large, at least the pointer array to a record number will become very big (for example, when it is 100,000). Then, in the form of the 7th operation, it has prevented growing a pointer array large by generating the value list which described two or more items on the multi-dimension target (for example, two-dimensional), without generating the pointer array to an imagination value list. The value list item value which described the above-mentioned double several-clauses eye is called a multidimensional array in this Description depending on the case. Drawing 42 is a flow chart which shows processing concerning the form of the 7th operation. Also in this processing, sharing processing is first performed like the thing of drawing 35 (Step 4201). Subsequently, a record number is sorted about the main table about each of two or more items which should be joined (Step 4202). The array (a sorting array or after-sorting record-number list) in which the record number sorted by this was stored is generated.

[0074] When the number of the items which should be joined is two, two sorting application is performed. for example, as shown in drawing 43 , when the item of the both sides of a "member name" and a "member family name" should be joined about the main table After sharing, a record number is sorted according to the sequence of the value list of [in the information block of a "member name"], and, subsequently is sorted according to the sequence of the value list of [in the information block of a "member family name"]. Subsequently, the pointer array to the value list which combined two or more items, and a value list is generated by referring to the record number under sorting array (Step 4203). As shown [details] in drawing 44 , after initializing the number of a sorting array more (Step 4401) Paying attention to the pointer array to the value list of [in the information block which corresponds for any of two or more items being], the pointer value stored in the position which the record number stored during the sorting array shows is specified (Step 4402). If processing of Step 4402 is performed to all the above-mentioned double several-clauses eyes (Step 4403, 4404 references), in a new value list, two or more pointer value will be arranged in predetermined sequence in the position corresponding to the number of a sorting array (Step 4405). Thus, two or more arranged pointer value (pointer value which is a multidimensional array) turns into an item value under value list.

[0075] furthermore, the above -- the pointer value to which the pointer array for specifying a new value list item value corresponds is generated (Step 4406). That is, in the pointer array to the above-mentioned value list, the value which shows the position where the item value was stored in the position corresponding to a record number is stored. The corresponding pointer value under pointer array to the value list from a record number is taken out by this, and the item value pointer value indicates the pointer value of a multidimensional array to be in the value list stored as an item value may be taken out. Processing of the above-mentioned step 4402 - Step 4407 is performed about the number of all the sorting arrays (Step 4407, 4408 references), and processing is completed.

[0076] Drawing 45 and drawing 46 are the figures showing the example which created the information block a "member family name + member name" after the sorting application shown in drawing 43 . Since the record number stored in the head (the 1st) in the sorting array (after-sorting record-number list) is "1" as shown in drawing 45 , [the sequence that the pointer value of the corresponding position (the 2nd line) was taken out in the pointer array to the value list of each information blocks, and this pointer value "0" and "3" were decided] In the value list of new information blocks of a "member family name + member name", it is stored in a top position as a two-dimensional array "0 3." Moreover, the position where the value list concerned is stored is arranged as pointer value to a value list in the position which the record number under pointer array shows. About other record numbers stored in the sorting array, the item value which is a two-dimensional array, and the pointer value under pointer array to a value list are stored in the same procedure. The same processing as Step 4202 and Step 4203 is performed also about a ** table (Steps 4204 and 4205). About the example mentioned above, the information block of "the year, member family name + year, and member name" of an "age table" is generated, and the value list which has the item value of the pointer array to a required value list and a two-dimensional array is made (refer to drawing 47).

[0077] Thus, if a value list which expressed two or more items with the item value of a two-dimensional array is obtained in the main table and a ** table The same processing as drawing 11 is performed using other information blocks about the information block including these value list and the item which should be shown in a table (view). That is, a value list which expressed two or more items with the item value of a two-dimensional array is shared (refer to Step 1101 - Step 1105). Subsequently, since the value list item value in an information block besides the above is specified, the pointer array to a record number is generated (Step 1106). Thus, after carrying out updating and generation of a predetermined pointer array or a value list, processing shown in drawing 12 is performed and a desired table (view) is created by taking out an item value.

[0078] Drawing 48 is a figure for explaining creation of the table (view) by the processing shown in drawing 12 in the form of the 7th operation. For example, in the information block (information block of a "member family name + member name") which includes the value list which expressed two or more items with the item value of a two-dimensional array about a record number "0", the pointer value under pointer array to a corresponding value list is "0 3." The former (namely, "0") means the item value "Suzuki" among these values, and the latter (namely, "3") means the item value "Ichiro." Therefore, in a table (view), "Suzuki" and "Ichiro" are displayed on a top line. In the pointer array to the record number to the table [record number / "0"] of other on the other hand, a corresponding value is "1." Therefore, the pointer value "0" of the position where the pointer array to a value list corresponds is found out among the information block of "age." Therefore, the item value "22" of the position which pointer value shows is displayed on a top line. It cannot be overemphasized that an item value is acquired in the same procedure about other record numbers. According to the form of this operation, it becomes possible to realize the join of two or more items, reducing required memory space.

[0079] Next, comparison with the processing which creates the table (view) which joins tabular format data and includes a predetermined item among the joined tabular format data, and the processing which creates the same table (view) using the conventional technique is briefly described using the technique concerning the form of operation of this invention. About the form of operation of this invention, as a processor, PentiumPro (registered trademark) was operated in 200MHZ, and the information block of the collection which constitutes tabular format data on RAM was created. The user table equipped with the user ID (0-9999: item 1) and the baseball professional baseball team name (12 professional baseball teams: item 2) of favor as tabular format data (10000 records), The game number (0-119: item 1), the baseball professional baseball team name (12 professional baseball teams: item 2), and the game table (12= 120x1440 record) equipped with the score (0-19 points) of each game were considered, and the table of the score of a professional baseball team which the user is carrying out to favor was created for every user. In this case, the total record count serves as 120(game) = 10000(user) x 1,200,000 record. In order to create a table based on the form of the 5th operation of the above-mentioned record by the technique of saving the memory of the both sides of the main table and a ** table, 0.195 second was required on the average. On the other hand, according to the conventional technique, InterBase4.2 (registered trademark) are used as a commercial database. 510 seconds was required, when the above-mentioned tabular format data was made to join and the view was created by the machine (PentiumPro (registered trademark) was operated on the same conditions as the above-mentioned processing as a processor) which used Paradox7 (registered trademark) as a client. Therefore, according to this invention, it turned out at speed the 3000 times abbreviation for the conventional thing of this that the join of tabular format data and creation of a table (view) are realizable.

[0080] Various change is possible for this invention within the limits of invention indicated to

Claims without being limited to the form of the above operation, and it cannot be overemphasized that they are also what is included within the limits of this invention. For example, in the form of the 1st operation, when displaying the table (view) sorted in items other than a key item like drawing 18 (b), explanation is added per. As shown in drawing 18 (a), in sorting in a key item and displaying a table (view) It is related with the information block (the above-mentioned example information block of "Service ID") used as a key item. the record count of main tabular format data for every value list item value is computed (presence number array), and where the record number of main tabular format data is sorted based on this, it rearranges -- **** (refer to drawing 17) -- some procedure is added for sorting by the other item.

[0081] In the technique according to the form of the 1st operation As shown in drawing 49 (a), a presence number array, the number array of accumulating totals, etc. are generated by other information blocks (in this case, information block of an "annual fee") through the information block (in this case, information block of "Service ID") about a key item. That is, the array of the record number (parent record number) about the sorted main tabular format data is generated through the information block which has the shared value list (refer to drawing 49 (b)).

[0082] Moreover, although specification of the information block which should make a value list share, calculation of a presence number array and/or a starting position array, generation of a conversion array, etc. are performed for every creation of a join and a table (view) in the form of said operation What is beforehand considered to be required may be joined, or a required array may be generated. Furthermore, when construction of the information block of the predetermined form based on tabular format data receives tabular format data, it may be performed beforehand, and directions of creation of a table (view) may be answered and it may be performed.

[0083] Furthermore, in the form of said 6th [the] and the 7th operation, in two or more tabular format data, although the technique of two items joining and presenting the item value about a predetermined item was described, it cannot be overemphasized that it is also possible to join three or more items. For example, what is necessary is to create the pointer array to the value list of imagination equipped with the pointer value of an individual about the form of the 6th operation, as mentioned above (pxqxr), and just to determine the correspondence to the value list of the imagination concerned. Or what is necessary is just to prepare a value list which serves as a set of the multidimensional array which each becomes from the value of three or more pieces about the form of the 7th operation.

[0084] Furthermore, although processing about the tabular format data with which two or more tabular format data was joined and joined by reading a predetermined program in the general computer system 10, and executing the program concerned in the form of said operation is realized It cannot be overemphasized that you may constitute so that this invention may not be

limited to this, and may connect the board computer only for database processing to the general computer system of a personal computer etc. and the board computer concerned can perform the above-mentioned processing. Therefore, in this Description, a means does not necessarily mean a physical means, and the function of each means includes, also when software is realized. Furthermore, even if the function of one means is realized by two or more physical means, the function of two or more means may be realized by one physical means.
[0085]
[Effect of the Invention] According to this invention, it becomes possible to be able to join two or more tabular format data like a request, and to offer the structure of tabular format data also with the small data volume, its joint method, and the united presentation method of tabular format data.

[Brief Description of the Drawings]
[Drawing 1] Drawing 1 is a block diagram which shows the hardware configuration of the computer system which can realize the search, total, and the search method concerning the form of operation of this invention.
[Drawing 2] Drawing 2 is the figure showing the information block used with the form of this operation.
[Drawing 3] Drawing 3 is the example of tabular format data, and the figure showing the example of an information block based on the tabular format data concerned.
[Drawing 4] Drawing 4 is the figure showing other examples of an information block based on other examples and tabular format data concerned of tabular format data.
[Drawing 5] Drawing 5 is a flow chart which shows the search technique about a single item.
[Drawing 6] Drawing 6 is a flow chart explaining the processing for creating an information block based on tabular format data.
[Drawing 7] Drawing 7 is the figure showing the example of the original data for creating an information block.
[Drawing 8] Drawing 8 is the figure showing the example of two tabular format data.
[Drawing 9] Drawing 9 is the figure showing the information block based on the tabular format data shown in drawing 8 .
[Drawing 10] Drawing 10 is a block diagram which shows an example of the function performed in CPU concerning the form of operation of this invention.
[Drawing 11] Drawing 11 is a flow chart which shows the processing for sharing of the value list concerning the form of this operation.
[Drawing 12] Drawing 12 (a) is the figure showing more a part of processing shown by drawing

11 in details about the example shown in drawing 8 and drawing 9 .
[Drawing 13] Drawing 13 is a flow chart which shows the view creation processing concerning the form of this operation.
[Drawing 14] Drawing 14 is a figure for explaining the view generated by drawing 13 .
[Drawing 15] Drawing 15 is a flow chart which shows the processing which obtains the table sorted about the required item concerning the form of this operation.
[Drawing 16] Drawing 16 is a view about "Customer ID", a "customer name", and an "annual fee", and is a figure for explaining the processing which displays the view sorted based on "Service ID."
[Drawing 17] Drawing 17 is a figure for explaining sorting of the record number concerning the form of this operation.
[Drawing 18] Drawing 18 is the figure showing the example of the view sorted in the predetermined item.
[Drawing 19] Drawing 19 is the figure showing the pointer array concerning the form of the 2nd operation.
[Drawing 20] Drawing 20 is the figure showing the pointer array concerning the form of the 3rd operation.
[Drawing 21] Drawing 21 is the figure showing the example of the tabular format data (table) used with the form of the 4th operation.
[Drawing 22] Drawing 22 is a flow chart which shows processing concerning the form of the 4th operation.
[Drawing 23] Drawing 23 is a figure for explaining sharing of the value list concerning the form of the 4th operation.
[Drawing 24] Drawing 24 is a figure for explaining sorting of the ** table concerning the form of the 4th operation.
[Drawing 25] Drawing 25 is a flow chart which shows extended processing of the pointer array to the value list of the main table concerning the form of the 4th operation.
[Drawing 26] Drawing 26 is a figure for explaining extension of the pointer array to the value list of the main table concerning the form of the 4th operation.
[Drawing 27] Drawing 27 is a flow chart which shows extended (generation) processing of the pointer array to the value list of ** tables concerning the form of the 4th operation.
[Drawing 28] Drawing 28 is a figure for explaining extension of the pointer array to the value list of ** tables concerning the form of the 4th operation.
[Drawing 29] Drawing 29 is the figure showing the information block for creating the joined table (view) concerning the form of the 4th operation.
[Drawing 30] Drawing 30 is a figure for explaining the conversion array prepared in the main table side concerning the form of the 5th operation.

[Drawing 31] Drawing 31 is a flow chart which shows processing of the conversion array creation by the side of the ** record concerning the form of the 5th operation.
[Drawing 32] Drawing 32 is the figure showing an example of the conversion array creation by the side of the ** table concerning the form of the 5th operation.
[Drawing 33] Drawing 33 is a figure which illustrates the procedure of obtaining the information block of an imagination "game day" based on the conversion array by the side of the ** table obtained by processing concerning the form of the 5th operation.
[Drawing 34] Drawing 34 is the figure showing the example of the tabular format data (table) used with the form of the 6th operation.
[Drawing 35] Drawing 35 is a flow chart which shows processing concerning the form of the 6th operation.
[Drawing 36] Drawing 36 is a figure for explaining the sharing processing concerning the form of the 6th operation.
[Drawing 37] Drawing 37 is a figure for explaining the pointer array to the imagination value list concerning the form of the 6th operation, and the value list concerned.
[Drawing 38] Drawing 38 is a figure for explaining the pointer array to the imagination value list concerning the form of the 6th operation, and the value list concerned.
[Drawing 39] Drawing 39 is a figure for explaining the pointer array to the imagination value list concerning the form of the 6th operation, and the value list concerned.
[Drawing 40] Drawing 40 is a figure for explaining the imagination value list concerning the form of the 6th operation, and the pointer array to a record number.
[Drawing 41] Drawing 41 is a figure for explaining the creation of a table (view) according to processing concerning the form of the 6th operation.
[Drawing 42] Drawing 42 is a flow chart which shows processing concerning the form of the 7th operation.
[Drawing 43] Drawing 43 is a figure for explaining secondary sorting of the main table concerning the form of the 7th operation.
[Drawing 44] Drawing 44 is the value list which has the pointer value which is the multidimensional array which combined two or more items concerning the form of the 7th operation, and a flow chart which shows raw ****** of a pointer array.
[Drawing 45] Drawing 45 is the figure showing the state where the new information block concerning the form of the 7th operation was created in the main table which performed sorting application shown in drawing 43 .
[Drawing 46] Drawing 46 is the figure showing the state where the new information block concerning the form of the 7th operation was created in the main table which performed sorting application shown in drawing 43 .
[Drawing 47] Drawing 47 is the figure about the ** table concerning the form of the 7th

operation showing a new information block.

[Drawing 48] Drawing 48 is a figure for explaining creation processing of the table (view) concerning the form of the 7th operation.

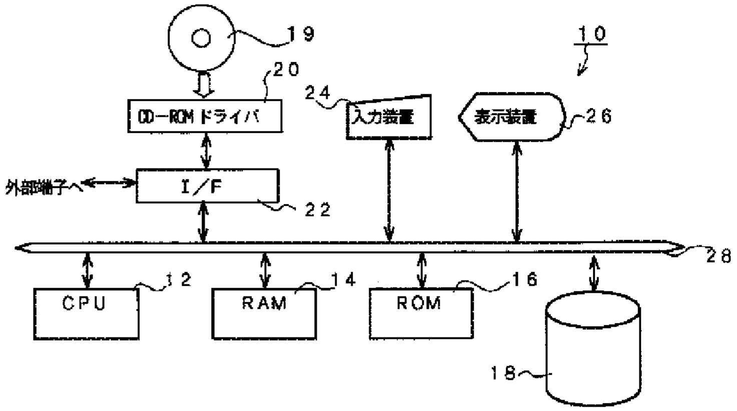
[Drawing 49] Drawing 49 is a figure for explaining the processing for obtaining the table (view) sorted in other items in the form of the 1st operation.

[Explanations of letters or numerals]

10 Computer System
12 CPU
14 RAM
16 ROM
18 Fixed Memory
20 CD-ROM Driver
22 I/F
24 Input Unit
26 Display Device

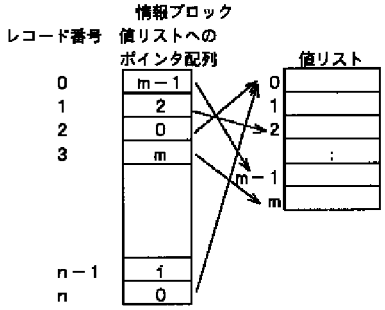
[Drawing 1]

図1


19
10
20
24
CD−ROM ドライバ
入力装置
表示装置
26
外部端子へ
I/F
22
28
CPU
12
RAM
14
ROM
16
18

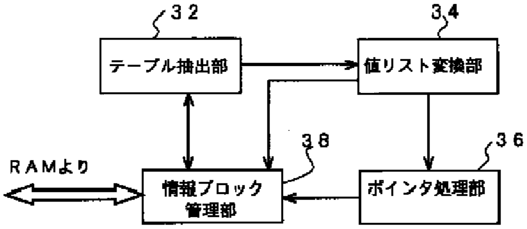
[Drawing 2]

図2


情報ブロック
レコード番号
値リストへの
ポインタ配列
値リスト
0
1
2
3
n−1
n
m−1
2
0
m
1
0
0
1
2
:
m−1
m

[Drawing 10]

図１０


３２
３４
テーブル抽出部
値リスト変換部
３８
３６
ＲＡＭより
情報ブロック管理部
ポインタ処理部

[Drawing 18]

図１８

（a）
サービスＩＤでソート

(ｻｰﾋﾞｽID)	年会費	顧客ＩＤ	顧客名
B	14,000	2	平△　△子
B	14,000	4	遠藤　＊郎
C	18,000	3	朝　×美
C	18,000	5	陳　□一
C	18,000	6	新■　■太
D	12,000	1	山田　○男

（b）
年会費でソート

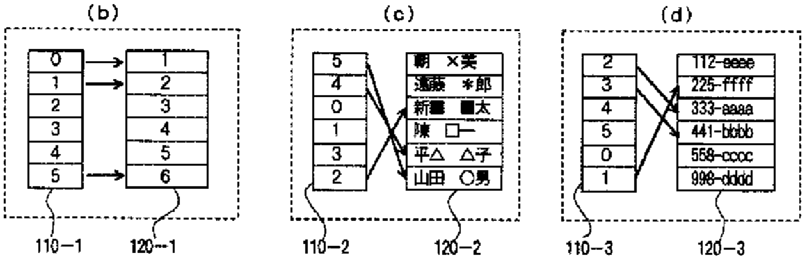
年会費	顧客ＩＤ	顧客名
12,000	1	山田　○男
14,000	2	平△　△子
14,000	4	遠藤　＊郎
18,000	3	朝　×美
18,000	5	陳　□一
18,000	6	新■　■太

[Drawing 3]

図３

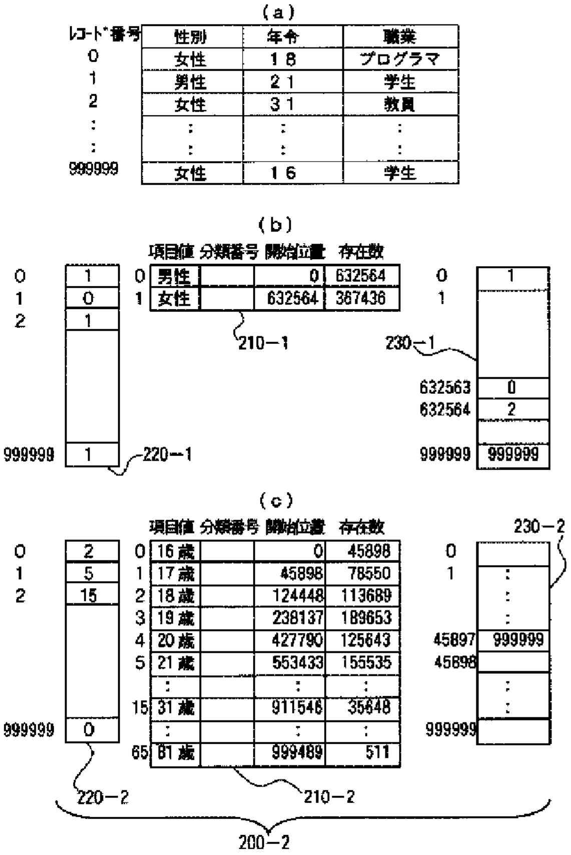
（a）

ﾚｺｰﾄﾞ番号	顧客ＩＤ	顧客名	電話番号
0	1	山田　○男	333-aaa
1	2	平△　△子	441-bbbb
2	3	朝　×美	558-cccc
3	4	遠藤　＊郎	998-dddd
4	5	陳　□一	112-eeee
5	6	新■　■太	225-ffff


（b）
0
1
2
3
4
5
1
2
3
4
5
6
110−1
120−1
（c）
5
4
0
1
3
2
朝　×美
遠藤　＊郎
新■　■太
陳　□一
平△　△子
山田　○男
110−2
120−2
（d）
2
3
4
5
0
1
112-eeee
225-ffff
333-aaaa
441-bbbb
558-cccc
998-dddd
110−3
120−3

[Drawing 4]

図4


(a)
(b)
0
1
2
999999
220−1
210−1
230−1
632563
632564
(c)
230−2
45897
45898
220−2
210−2
200−2

(a)

レコード番号	性別	年令	職業
0	女性	18	プログラマ
1	男性	21	学生
2	女性	31	教員
:	:	:	:
:	:	:	:
999999	女性	16	学生

(b)

	項目値	分類番号	開始位置	存在数
0	男性		0	632564
1	女性		632564	367436

220−1	
0	1
1	0
2	1
999999	1

230−1	
0	1
1	
632563	0
632564	2
999999	999999

(c)

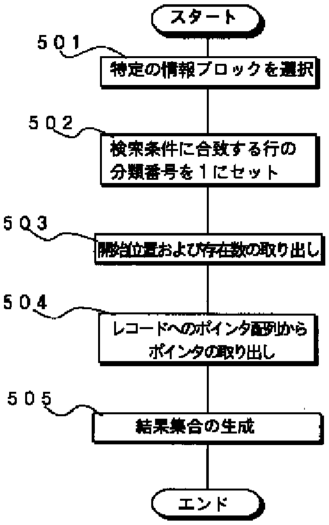
	項目値	分類番号	開始位置	存在数
0	16 歳		0	45898
1	17 歳		45898	78550
2	18 歳		124448	113689
3	19 歳		238137	189653
4	20 歳		427790	125643
5	21 歳		553433	155535
	:		:	:
15	31 歳		911546	35648
	:		:	:
65	81 歳		999489	511

220−2	
0	2
1	5
2	15
999999	0

230−2	
0	
1	:
	:
	:
45897	999999
45898	
	:
	:
999999	

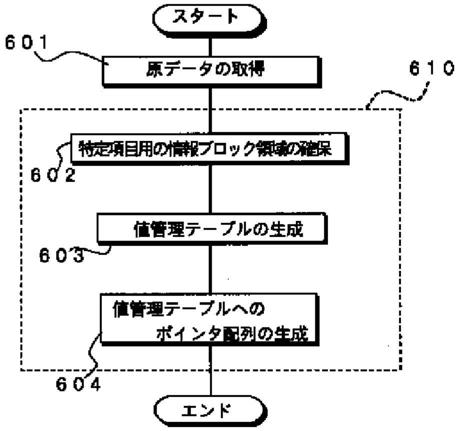
[Drawing 5]

図5


スタート
501
特定の情報ブロックを選択
502
検索条件に合致する行の分類番号を１にセット
503
開始位置および存在数の取り出し
504
レコードへのポインタ配列からポインタの取り出し
505
結果集合の生成
エンド

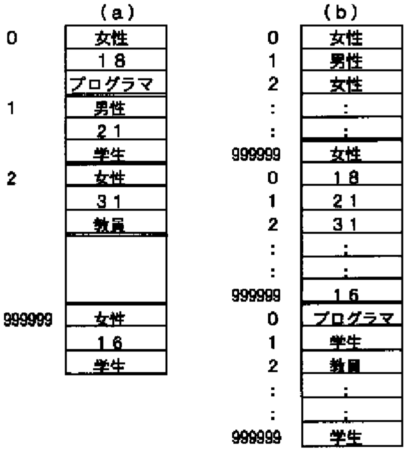
[Drawing 6]

図6


スタート
601
原データの取得
610
特定項目用の情報ブロック領域の確保
602
値管理テーブルの生成
603
値管理テーブルへの ポインタ配列の生成
604
エンド

[Drawing 7]

図7



(a)

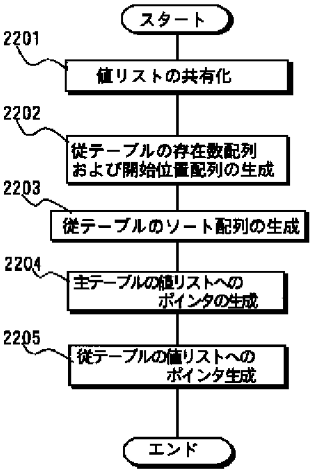
0	女性
	18
	プログラマ
1	男性
	21
	学生
2	女性
	31
	教員
999999	女性
	16
	学生

(b)

0	女性
1	男性
2	女性
:	:
:	:
999999	女性
0	18
1	21
2	31
:	:
:	:
999999	16
0	プログラマ
1	学生
2	教員
:	:
:	:
999999	学生

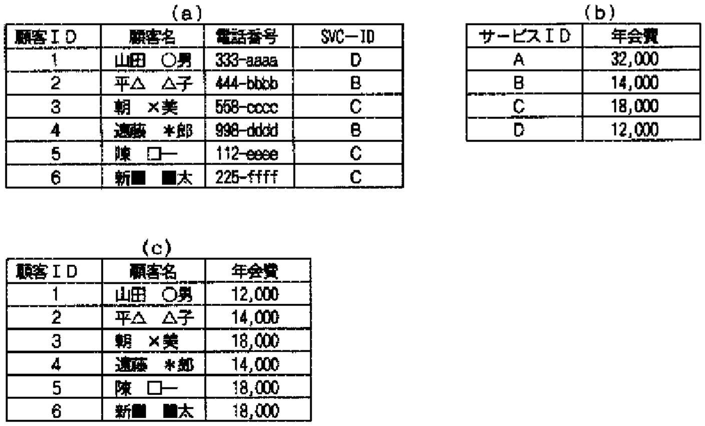
[Drawing 22]

図22


スタート
2201
値リストの共有化
2202
従テーブルの存在数配列 および開始位置配列の生成
2203
従テーブルのソート配列の生成
2204
主テーブルの値リストへの ポインタの生成
2205
従テーブルの値リストへの ポインタ生成
エンド

[Drawing 8]

図8



(a)

顧客ＩＤ	顧客名	電話番号	SVC－ID
1	山田　○男	333-aaaa	D
2	平△　△子	444-bbbb	B
3	朝　×美	558-cccc	C
4	遠藤　＊郎	998-dddd	B
5	陳　口ー	112-eeee	C
6	新■　■太	225-ffff	C

(b)

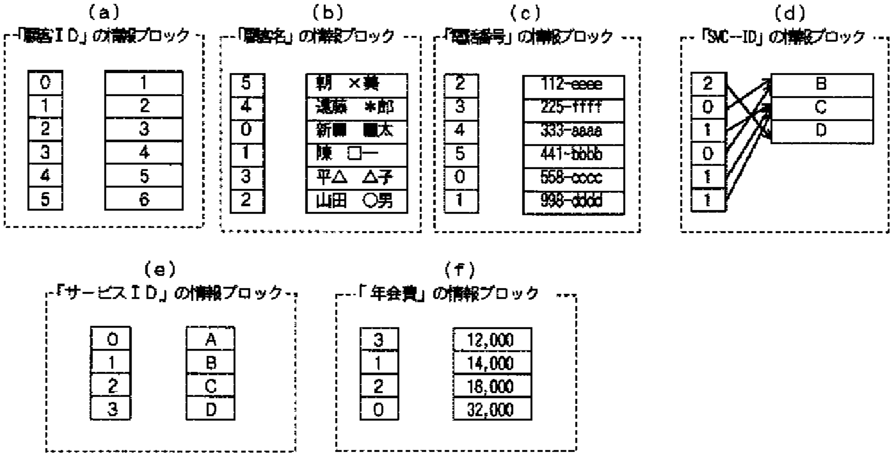
サービスＩＤ	年会費
A	32,000
B	14,000
C	18,000
D	12,000

(c)

顧客ＩＤ	顧客名	年会費
1	山田　○男	12,000
2	平△　△子	14,000
3	朝　×美	18,000
4	遠藤　＊郎	14,000
5	陳　口ー	18,000
6	新■　■太	18,000

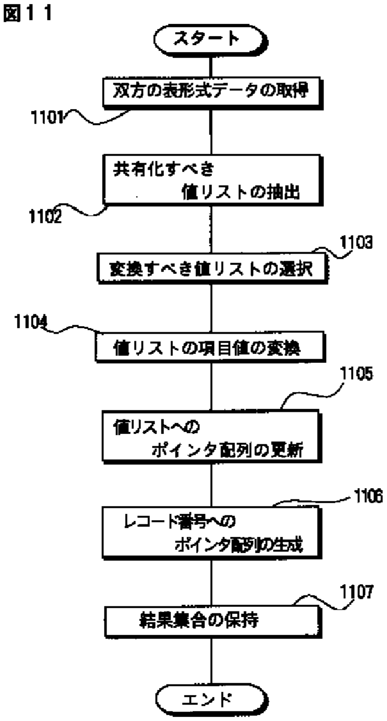
[Drawing 9]

図9


(a)
「顧客ＩＤ」の情報ブロック
0
1
2
3
4
5
1
2
3
4
5
6
(b)
「顧客名」の情報ブロック
5
4
0
1
3
2
朝　×美
遠藤　＊郎
新■　■太
陳　口ー
平△　△子
山田　○男
(c)
「電話番号」の情報ブロック
2
3
4
5
0
1
112-eeee
225-ffff
333-aaaa
441-bbbb
558-cccc
998-dddd
(d)
「SVC－ID」の情報ブロック
2
0
1
0
1
1
B
C
D
(e)
「サービスＩＤ」の情報ブロック
0
1
2
3
A
B
C
D
(f)
「年会費」の情報ブロック
3
1
2
0
12,000
14,000
18,000
32,000

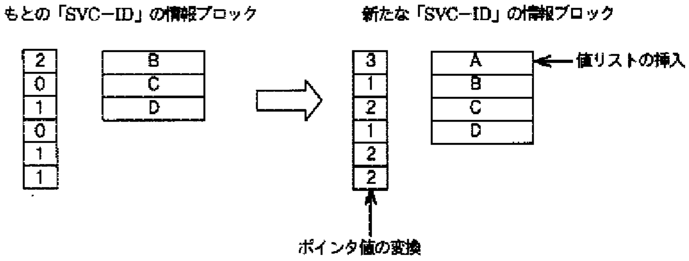
[Drawing 11]

図１１


スタート
双方の表形式データの取得
1101
共有化すべき 値リストの抽出
1102
1103
変換すべき値リストの選択
1104
値リストの項目値の変換
1105
値リストへの ポインタ配列の更新
1106
レコード番号への ポインタ配列の生成
1107
結果集合の保持
エンド

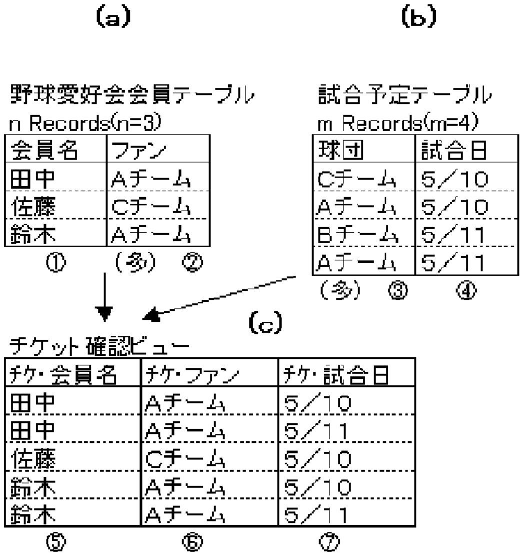
[Drawing 12]

図１２


もとの「SVC−ID」の情報ブロック
2
0
1
0
1
1
B
C
D
新たな「SVC−ID」の情報ブロック
3
1
2
1
2
2
A
B
C
D
値リストの挿入
ポインタ値の変換

[Drawing 21]

図21


(a)
(b)
(c)
①
(多)
②
(多)
③
④
⑤
⑥
⑦

野球愛好会会員テーブル
n Records(n=3)

会員名	ファン
田中	Aチーム
佐藤	Cチーム
鈴木	Aチーム

試合予定テーブル
m Records(m=4)

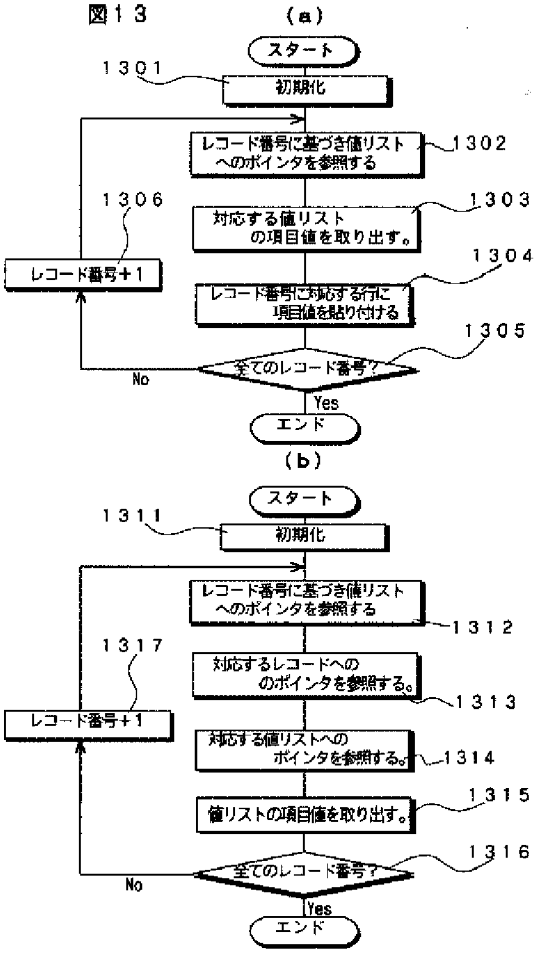
球団	試合日
Cチーム	5/10
Aチーム	5/10
Bチーム	5/11
Aチーム	5/11

チケット確認ビュー

チケ・会員名	チケ・ファン	チケ・試合日
田中	Aチーム	5/10
田中	Aチーム	5/11
佐藤	Cチーム	5/10
鈴木	Aチーム	5/10
鈴木	Aチーム	5/11

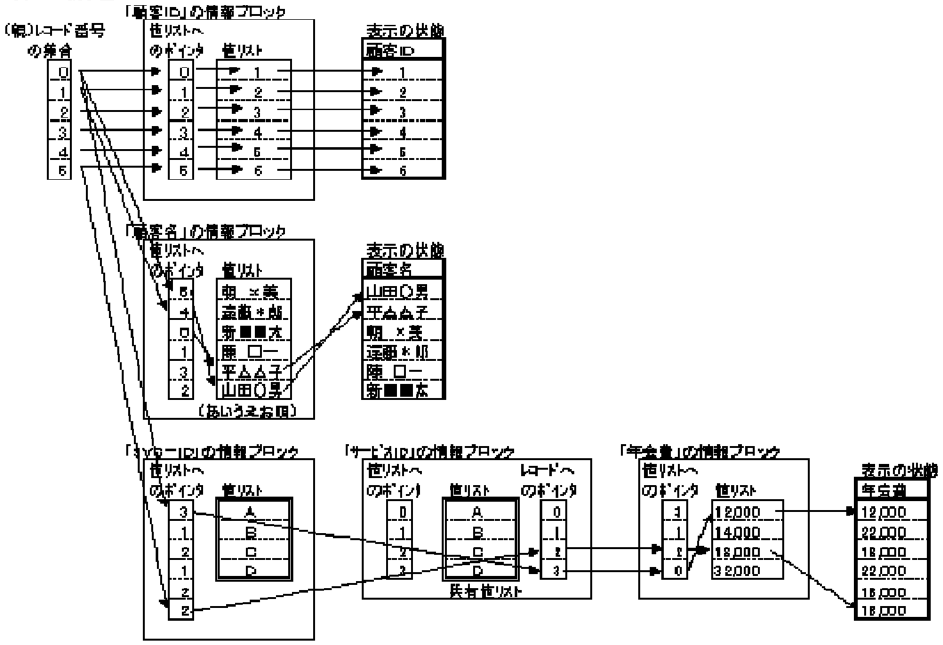
[Drawing 13]

図13


(a)
スタート
1301
初期化
レコード番号に基づき値リストへのポインタを参照する
1302
1306
対応する値リストの項目値を取り出す。
1303
レコード番号+1
1304
レコード番号に対応する行に項目値を貼り付ける
1305
全てのレコード番号?
No
Yes
エンド
(b)
スタート
1311
初期化
レコード番号に基づき値リストへのポインタを参照する
1312
1317
対応するレコードへののポインタを参照する。
1313
レコード番号+1
対応する値リストへのポインタを参照する。
1314
値リストの項目値を取り出す。
1315
全てのレコード番号?
1316
No
Yes
エンド

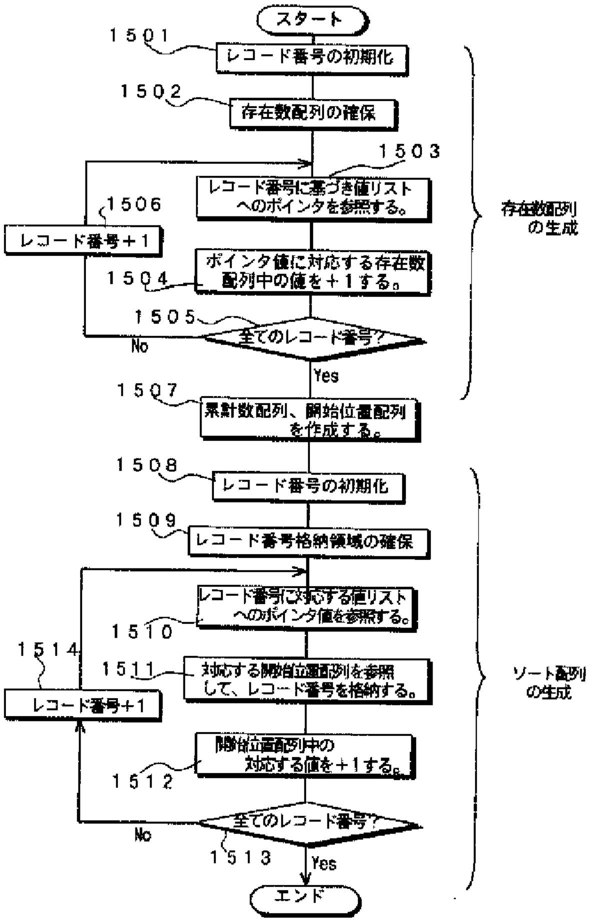
[Drawing 14]

図14 請求額ビュー


「顧客ID」の情報ブロック
(昇)レコード番号の集合
値リストへのポインタ
値リスト
表示の状態
顧客ID
「顧客名」の情報ブロック
顧客名
朝 ×美
遠藤＊郎
新■■太
陳 口一
平△△子
山田○男
(あいうえお順)
「サービスID」の情報ブロック
レコードへのポインタ
既存値リスト
「年会費」の情報ブロック
12,000
14,000
18,000
32,000
年会費
22,000

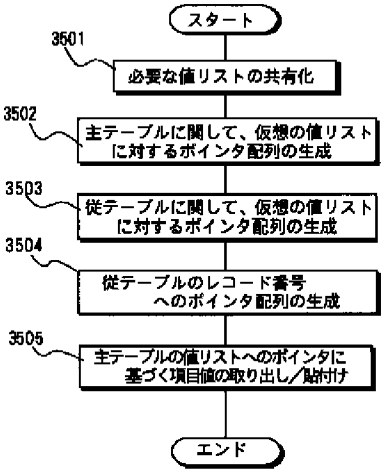
[Drawing 15]

図１５


スタート
1501
レコード番号の初期化
1502
存在数配列の確保
1503
レコード番号に基づき値リストへのポインタを参照する。
1506
レコード番号＋1
1504
ポインタ値に対応する存在数配列中の値を＋1する。
1505
全てのレコード番号？
No
Yes
存在数配列の生成
1507
累計数配列、開始位置配列を作成する。
1508
レコード番号の初期化
1509
レコード番号格納領域の確保
1510
レコード番号に対応する値リストへのポインタ値を参照する。
1514
1511
対応する開始位置配列を参照して、レコード番号を格納する。
レコード番号+1
ソート配列の生成
1512
開始位置配列中の対応する値を＋1する。
全てのレコード番号？
No
1513
Yes
エンド

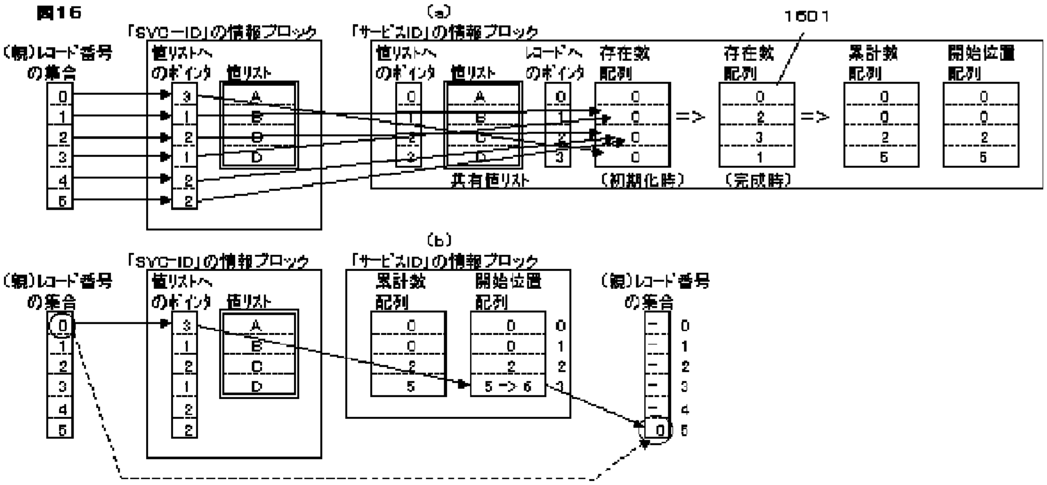
[Drawing 35]

図３５


スタート
3501
必要な値リストの共有化
3502
主テーブルに関して、仮想の値リストに対するポインタ配列の生成
3503
従テーブルに関して、仮想の値リストに対するポインタ配列の生成
3504
従テーブルのレコード番号へのポインタ配列の生成
3505
主テーブルの値リストへのポインタに基づく項目値の取り出し／貼付け
エンド

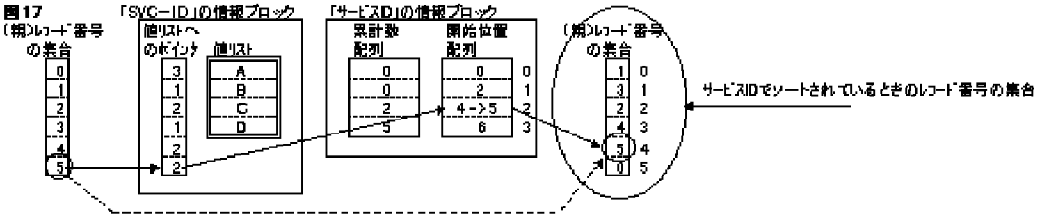
[Drawing 16]

図16


(a)
1601
「SVC−ID」の情報ブロック
「サービスID」の情報ブロック
(親)レコード番号の集合
値リストへのポインタ
値リスト
レコードへのポインタ
存在数配列
累計数配列
開始位置配列
共有値リスト
(初期化時)
(完成時)
=>
(b)
5 −> 6

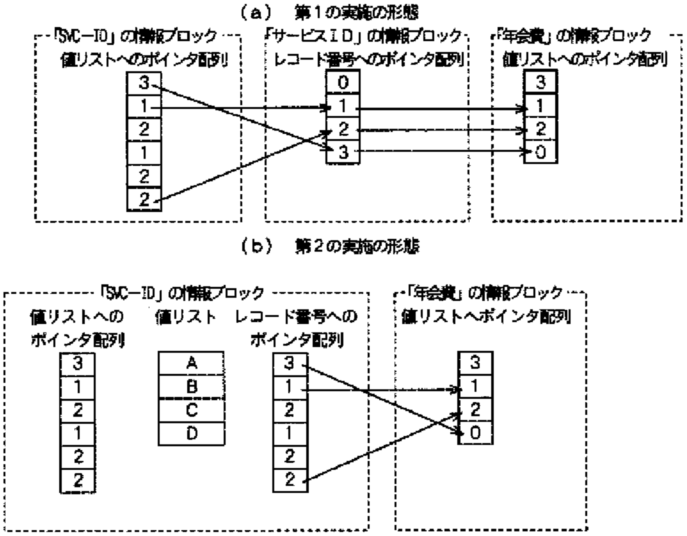
[Drawing 17]

図17


「SVC−ID」の情報ブロック
「サービスID」の情報ブロック
(親)レコード番号の集合
値リストへのポインタ
値リスト
累計数配列
開始位置配列
4−>5
サービスIDでソートされているときのレコード番号の集合

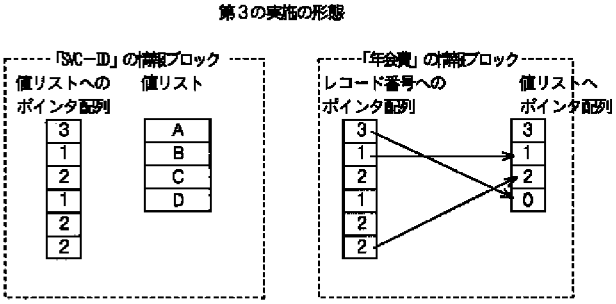
[Drawing 19]

図１９


（ａ）　第１の実施の形態
「SVC−ID」の情報ブロック
値リストへのポインタ配列
「サービスＩＤ」の情報ブロック
レコード番号へのポインタ配列
「年会費」の情報ブロック
値リストへのポインタ配列
3
1
2
1
2
2
0
1
2
3
3
1
2
0
（ｂ）　第２の実施の形態
「SVC−ID」の情報ブロック
値リストへの
ポインタ配列
値リスト
レコード番号への
ポインタ配列
A
B
C
D
「年会費」の情報ブロック
値リストへポインタ配列

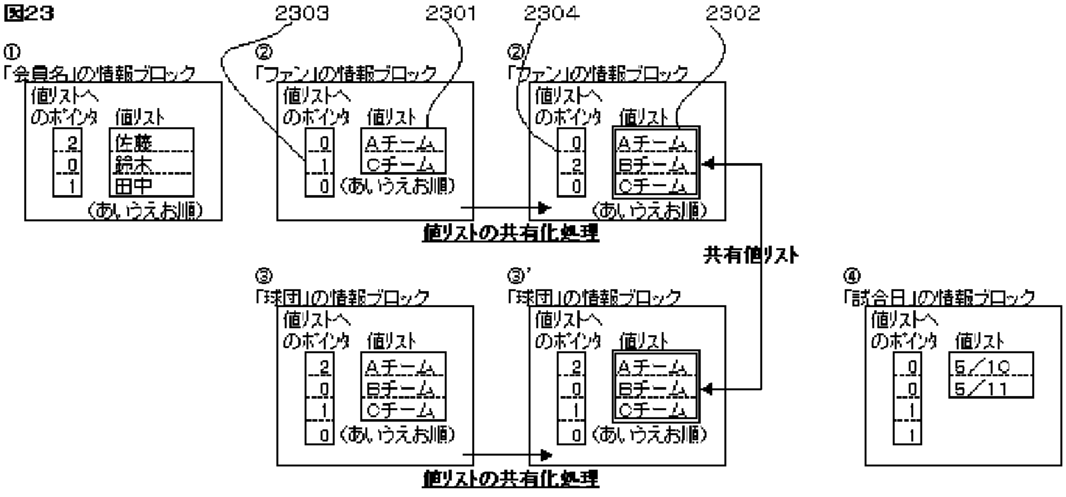
[Drawing 20]

図２０


第３の実施の形態
「SVC−ID」の情報ブロック
値リストへの
ポインタ配列
値リスト
3
1
2
1
2
2
A
B
C
D
「年会費」の情報ブロック
レコード番号への
ポインタ配列
値リストへ
ポインタ配列
3
1
2
0

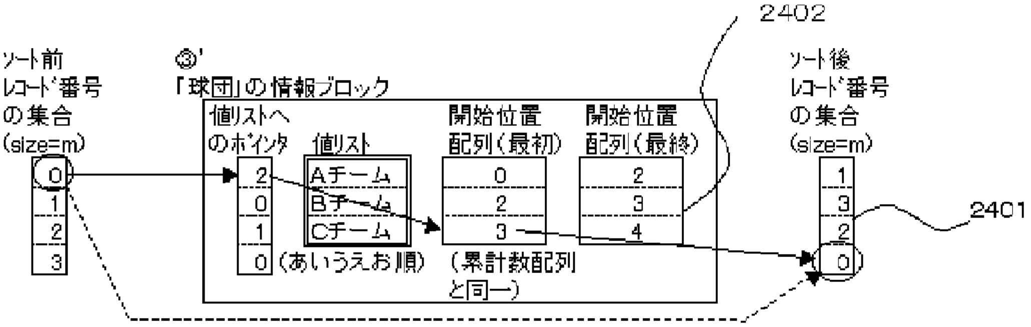
[Drawing 23]

図23


2303
2301
2304
2302
①
「会員名」の情報ブロック
値リストへ
のポインタ
値リスト
2
0
1
佐藤
鈴木
田中
（あいうえお順）
②
「ファン」の情報ブロック
値リストへ
のポインタ
値リスト
0
1
0
Aチーム
Cチーム
（あいうえお順）
②'
「ファン」の情報ブロック
値リストへ
のポインタ
値リスト
0
2
0
Aチーム
Bチーム
Cチーム
（あいうえお順）
値リストの共有化処理
共有値リスト
③
「球団」の情報ブロック
値リストへ
のポインタ
値リスト
2
0
1
0
Aチーム
Bチーム
Cチーム
（あいうえお順）
③'
「球団」の情報ブロック
値リストへ
のポインタ
値リスト
2
0
1
0
Aチーム
Bチーム
Cチーム
（あいうえお順）
値リストの共有化処理
④
「試合日」の情報ブロック
値リストへ
のポインタ
値リスト
0
0
1
1
5／10
5／11

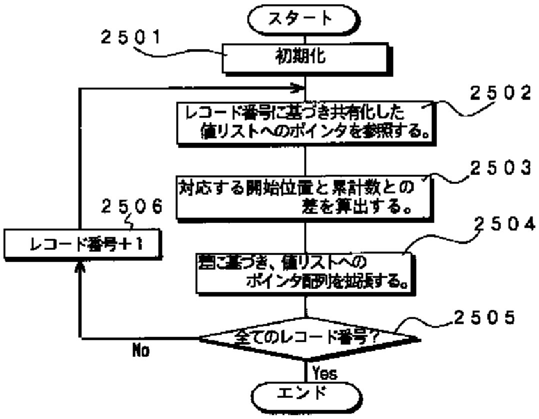
[Drawing 24]

図24


2402
ソート前
レコード番号
の集合
(size=m)
0
1
2
3
③'
「球団」の情報ブロック
値リストへ
のポインタ
2
0
1
0
値リスト
Aチーム
Bチーム
Cチーム
(あいうえお順)
開始位置
配列(最初)
0
2
3
(累計数配列
と同一)
開始位置
配列(最終)
2
3
4
ソート後
レコード番号
の集合
(size=m)
1
3
2
0
2401

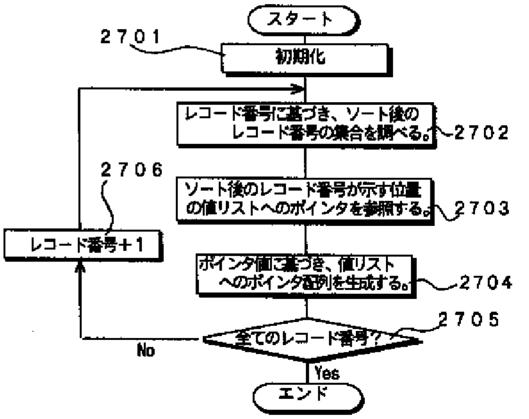
[Drawing 25]

図25


スタート
2501
初期化
2502
レコード番号に基づき共有化した
値リストへのポインタを参照する。
2503
対応する開始位置と累計数との
差を算出する。
2506
レコード番号+1
2504
差に基づき、値リストへの
ポインタ配列を拡張する。
2505
全てのレコード番号?
No
Yes
エンド

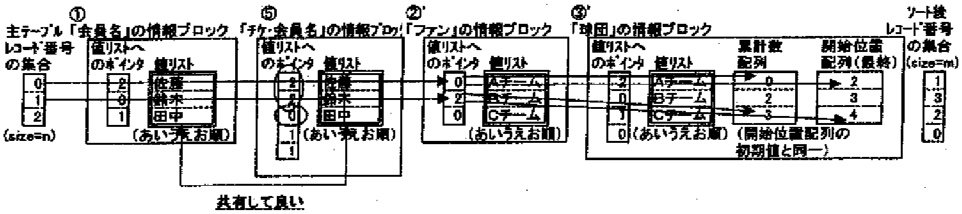
[Drawing 27]

図27


スタート
2701
初期化
レコード番号に基づき、ソート後の
レコード番号の集合を調べる。
2702
2706
ソート後のレコード番号が示す位置
の値リストへのポインタを参照する。
2703
レコード番号+1
ポインタ値に基づき、値リスト
へのポインタ配列を生成する。
2704
2705
全てのレコード番号?
No
Yes
エンド

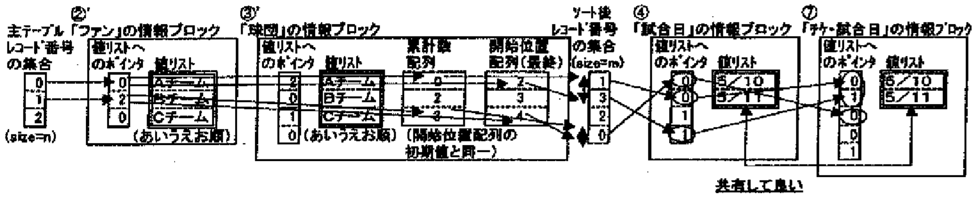
[Drawing 26]

図26


①
主テーブル「会員名」の情報ブロック
レコード番号
の集合
0
1
2
(size=n)
値リストへ
のポインタ
2
0
1
値リスト
佐藤
鈴木
田中
(あいうえお順)
⑤
「チケ・会員名」の情報ブロック
値リストへ
のポインタ
2
2
0
1
1
値リスト
佐藤
鈴木
田中
(あいうえお順)
②'
「ファン」の情報ブロック
値リストへ
のポインタ
0
2
0
値リスト
Aチーム
Bチーム
Cチーム
(あいうえお順)
③'
「球団」の情報ブロック
値リストへ
のポインタ
2
0
1
0
値リスト
Aチーム
Bチーム
Cチーム
(あいうえお順)
累計数
配列
0
2
3
(開始位置配列の
初期値と同一)
開始位置
配列(最終)
2
3
4
ソート後
レコード番号
の集合
(size=m)
1
3
2
0
共有して良い

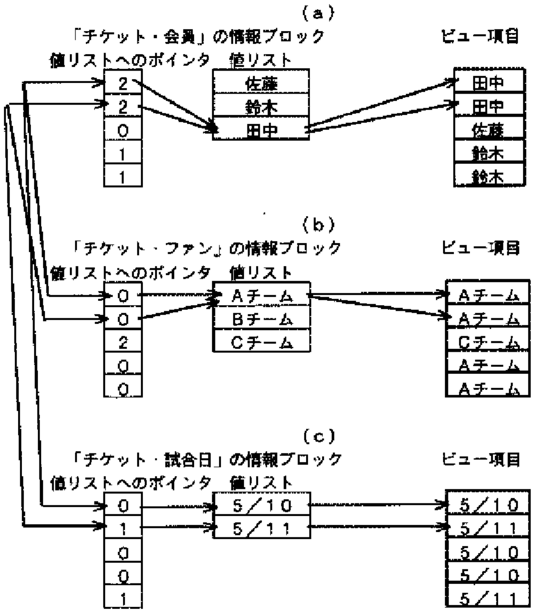
[<A HREF="/AIPN/odse_itm_draw.ipdl?N0000=7434&N0500=1E_N/;>=<<6<6? ///////&N0001=342&N0552=9&N0553=000030" TARGET="odse_itm_draw"> drawing 28]

図28


②'
主ﾃｰﾌﾞﾙ
ﾚｺｰﾄﾞ番号
の集合
0
1
2
(size=n)
「ファン」の情報ブロック
値ﾘｽﾄへ
のﾎﾟｲﾝﾀ
0
2
0
値ﾘｽﾄ
Aチーム
Bチーム
Cチーム
(あいうえお順)
③'
「球団」の情報ブロック
値ﾘｽﾄへ
のﾎﾟｲﾝﾀ
2
0
1
0
値ﾘｽﾄ
Aチーム
Bチーム
Cチーム
(あいうえお順)
累計数
配列
0
2
3
(開始位置配列の
初期値と同一)
開始位置
配列(最終)
2
3
4
ｿｰﾄ後
ﾚｺｰﾄﾞ番号
の集合
(size=m)
1
3
2
0
④
「試合日」の情報ブロック
値ﾘｽﾄへ
のﾎﾟｲﾝﾀ
0
0
1
1
値ﾘｽﾄ
5/10
5/11
⑦
「ﾁｹ・試合日」の情報ﾌﾞﾛｯｸ
値ﾘｽﾄへ
のﾎﾟｲﾝﾀ
0
1
0
0
1
値ﾘｽﾄ
5/10
5/11
共有して良い

[Drawing 29]

図29

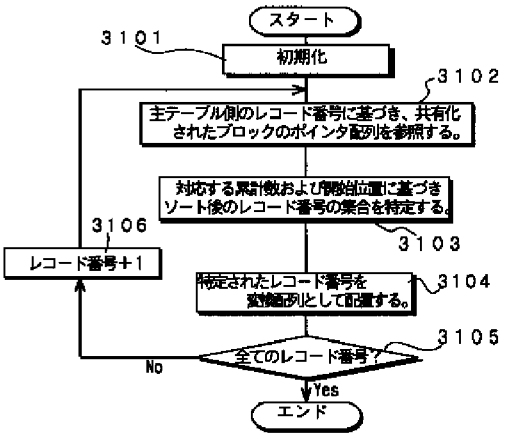

(a)
「チケット・会員」の情報ブロック
値リストへのポインタ
2
2
0
1
1
値リスト
佐藤
鈴木
田中
ビュー項目
田中
田中
佐藤
鈴木
鈴木
(b)
「チケット・ファン」の情報ブロック
値リストへのポインタ
0
0
2
0
0
値リスト
Aチーム
Bチーム
Cチーム
ビュー項目
Aチーム
Aチーム
Cチーム
Aチーム
Aチーム
(c)
「チケット・試合日」の情報ブロック
値リストへのポインタ
0
1
0
0
1
値リスト
5/10
5/11
ビュー項目
5/10
5/11
5/10
5/10
5/11

(d)

ﾁｹｯﾄ・会員名	ﾁｹｯﾄ・ﾌｧﾝ	ﾁｹｯﾄ・試合日
田中	Aチーム	5/10
田中	Aチーム	5/11
佐藤	Cチーム	5/10
鈴木	Aチーム	5/10
鈴木	Aチーム	5/11

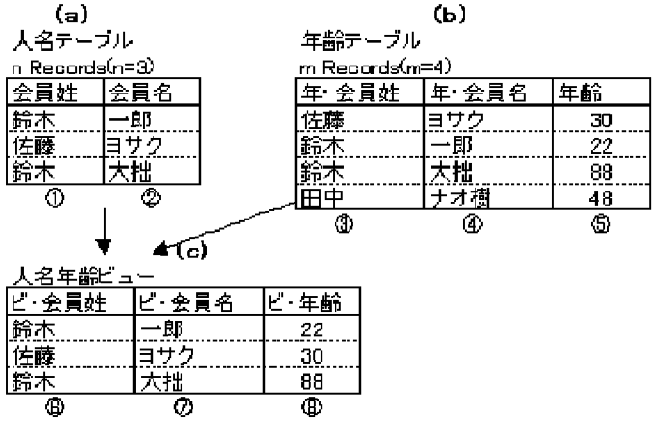
[Drawing 31]

図３１


スタート
3101
初期化
3102
主テーブル側のレコード番号に基づき、共有化されたブロックのポインタ配列を参照する。
対応する累計数および開始位置に基づきソート後のレコード番号の集合を特定する。
3103
3106
レコード番号＋1
特定されたレコード番号を変換配列として配置する。
3104
3105
全てのレコード番号？
No
Yes
エンド

[Drawing 34]

図34


(a)
(b)
(c)
①
②
③
④
⑤
⑥
⑦
⑧

人名テーブル

n Records(n=3)

会員姓	会員名
鈴木	一郎
佐藤	ヨサク
鈴木	大拙

年齢テーブル

m Records(m=4)

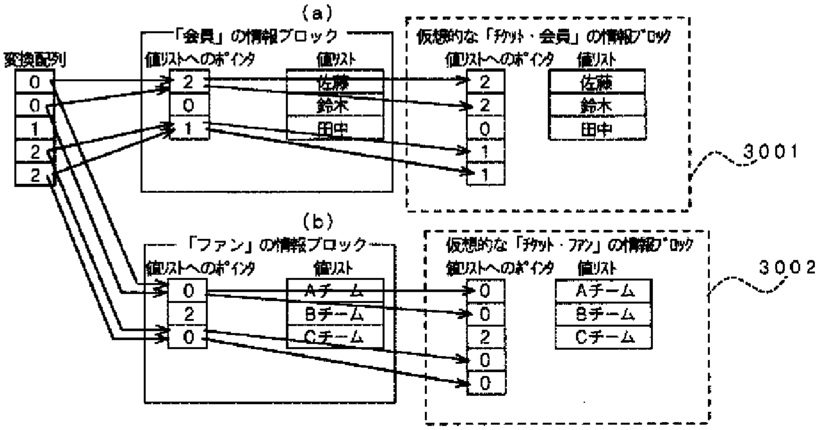
年･会員姓	年･会員名	年齢
佐藤	ヨサク	30
鈴木	一郎	22
鈴木	大拙	88
田中	ナオ樹	48

人名年齢ビュー

ビ･会員姓	ビ･会員名	ビ･年齢
鈴木	一郎	22
佐藤	ヨサク	30
鈴木	大拙	88

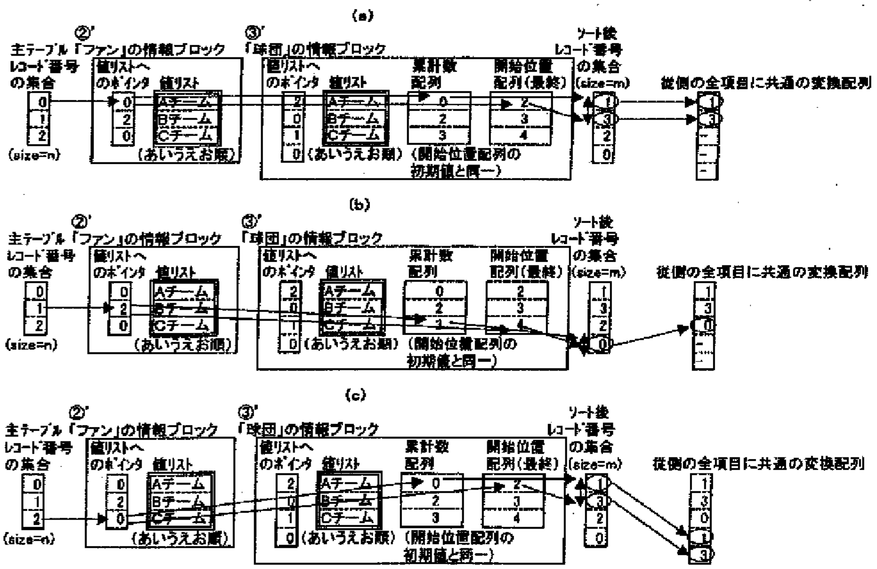
[Drawing 30]

図３０


(a)
変換配列
0
0
1
2
2
「会員」の情報ブロック
値リストへのポインタ
2
0
1
値リスト
佐藤
鈴木
田中
仮想的な「チケット・会員」の情報ブロック
値リストへのポインタ
2
2
0
1
1
値リスト
佐藤
鈴木
田中
3001
(b)
「ファン」の情報ブロック
値リストへのポインタ
0
2
0
値リスト
Aチーム
Bチーム
Cチーム
仮想的な「チケット・ファン」の情報ブロック
値リストへのポインタ
0
0
2
0
0
値リスト
Aチーム
Bチーム
Cチーム
3002

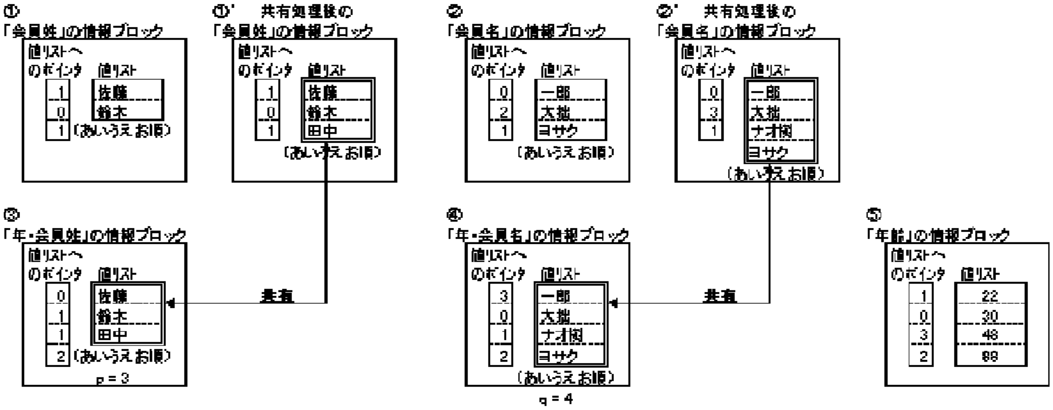
[Drawing 32]

図32


(a)
(b)
(c)
②'
主テーブル「ファン」の情報ブロック
レコード番号の集合
(size=n)
値リストへのポインタ
値リスト
Aチーム
Bチーム
Cチーム
(あいうえお順)
③'
「球団」の情報ブロック
累計数配列
開始位置配列(最終)
(開始位置配列の初期値と同一)
ソート後レコード番号の集合
(size=m)
従側の全項目に共通の変換配列

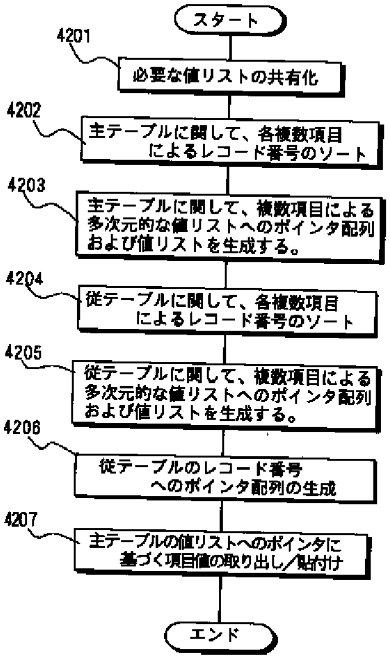
[Drawing 36]

図36


①
「会員姓」の情報ブロック
①' 共有処理後の「会員姓」の情報ブロック
②
「会員名」の情報ブロック
②' 共有処理後の「会員名」の情報ブロック
③
「年・会員姓」の情報ブロック
④
「年・会員名」の情報ブロック
⑤
「年齢」の情報ブロック
値リストへのポインタ
値リスト
佐藤
鈴木
田中
一郎
大拙
ナオ樹
ヨサク
22
30
48
88
(あいうえお順)
共有
p = 3
q = 4

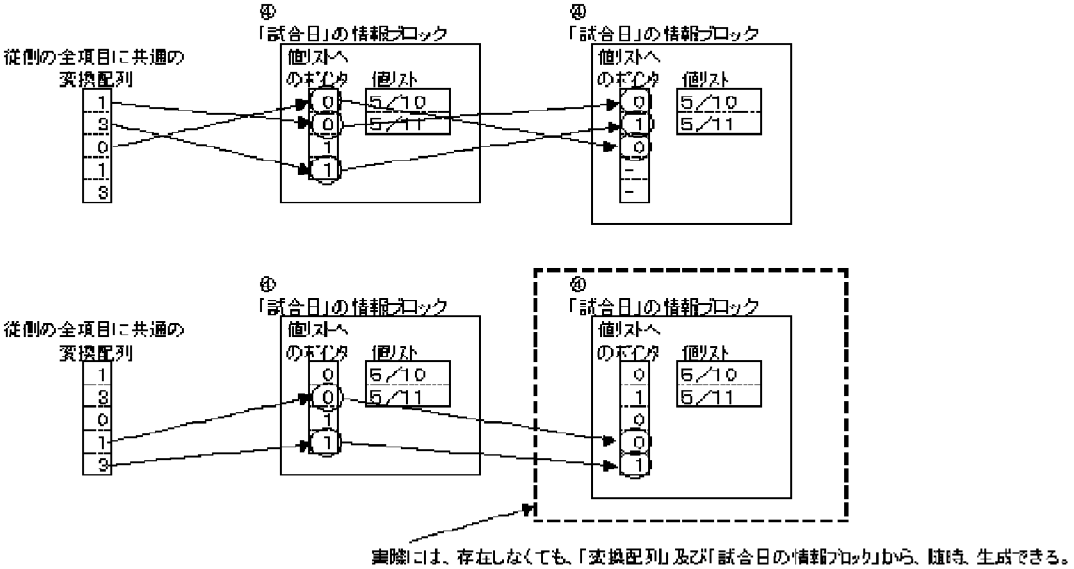
[Drawing 42]

図４２


スタート
4201
必要な値リストの共有化
4202
主テーブルに関して、各複数項目によるレコード番号のソート
4203
主テーブルに関して、複数項目による多次元的な値リストへのポインタ配列および値リストを生成する。
4204
従テーブルに関して、各複数項目によるレコード番号のソート
4205
従テーブルに関して、複数項目による多次元的な値リストへのポインタ配列および値リストを生成する。
4206
従テーブルのレコード番号へのポインタ配列の生成
4207
主テーブルの値リストへのポインタに基づく項目値の取り出し／貼付け
エンド

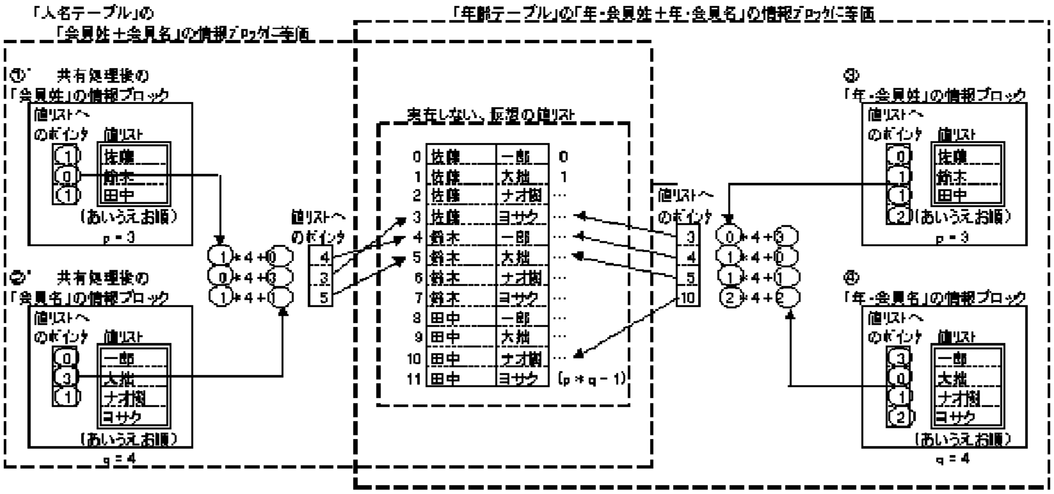
[Drawing 33]

図33


④
「試合日」の情報ブロック
④
「試合日」の情報ブロック
従側の全項目に共通の変換配列
値リストへのポインタ
値リスト
1
3
0
1
3
0
0
1
1
5／10
5／11
0
1
0
－
－
④
「試合日」の情報ブロック
④
「試合日」の情報ブロック
従側の全項目に共通の変換配列
値リストへのポインタ
値リスト
0
1
0
1
5／10
5／11
実際には、存在しなくても、「変換配列」及び「試合日の情報ブロック」から、随時、生成できる。

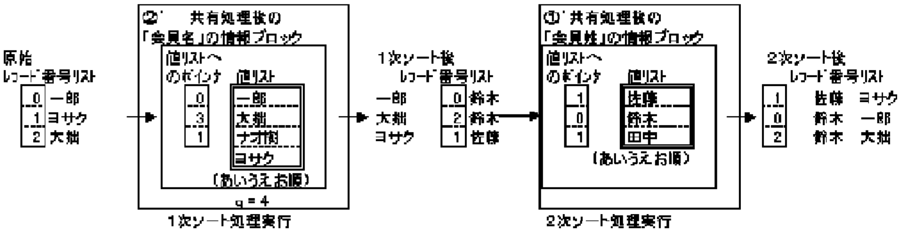
[Drawing 37]

図37


「人名テーブル」の
「会員姓＋会員名」の情報ブロックに等価
「年齢テーブル」の「年・会員姓＋年・会員名」の情報ブロックに等価
①' 共有処理後の
「会員姓」の情報ブロック
値リストへのポインタ
値リスト
1
0
1
佐藤
鈴木
田中
（あいうえお順）
p = 3
②' 共有処理後の
「会員名」の情報ブロック
値リストへのポインタ
値リスト
0
3
1
一郎
大拙
ナオ樹
ヨサク
（あいうえお順）
q = 4
1 * 4 + 0
0 * 4 + 3
1 * 4 + 1
値リストへのポインタ
4
3
5
実在しない、仮想の値リスト
0 佐藤 一郎 0
1 佐藤 大拙 1
2 佐藤 ナオ樹 …
3 佐藤 ヨサク …
4 鈴木 一郎 …
5 鈴木 大拙 …
6 鈴木 ナオ樹 …
7 鈴木 ヨサク …
8 田中 一郎 …
9 田中 大拙 …
10 田中 ナオ樹 …
11 田中 ヨサク (p * q − 1)
値リストへのポインタ
3
4
5
10
0 * 4 + 3
1 * 4 + 0
1 * 4 + 1
2 * 4 + 2
③
「年・会員姓」の情報ブロック
値リストへのポインタ
値リスト
0
1
1
2
佐藤
鈴木
田中
（あいうえお順）
p = 3
④
「年・会員名」の情報ブロック
値リストへのポインタ
値リスト
3
0
1
2
一郎
大拙
ナオ樹
ヨサク
（あいうえお順）
q = 4

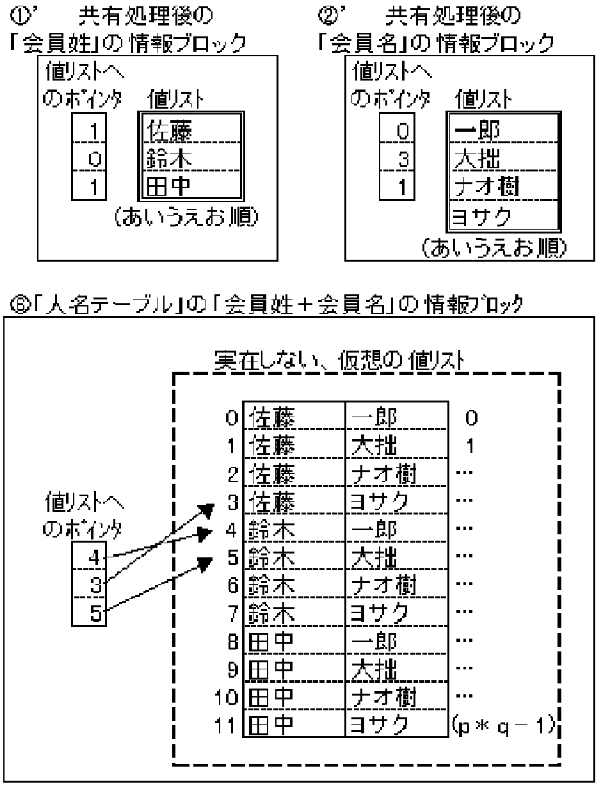
[Drawing 43]

図43


原始
レコード番号リスト
0 一郎
1 ヨサク
2 大拙
②' 共有処理後の
「会員名」の情報ブロック
値リストへのポインタ
値リスト
0
3
1
一郎
大拙
ナオ樹
ヨサク
（あいうえお順）
q = 4
1次ソート処理実行
1次ソート後
レコード番号リスト
一郎 0 鈴木
大拙 2 鈴木
ヨサク 1 佐藤
①' 共有処理後の
「会員姓」の情報ブロック
値リストへのポインタ
値リスト
1
0
1
佐藤
鈴木
田中
（あいうえお順）
2次ソート処理実行
2次ソート後
レコード番号リスト
1 佐藤 ヨサク
0 鈴木 一郎
2 鈴木 大拙

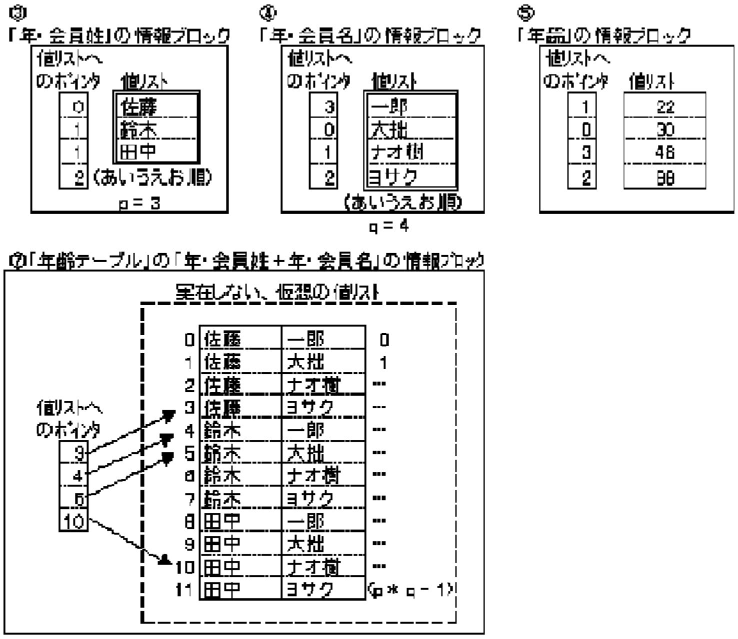
[Drawing 38]

図38


①' 共有処理後の
「会員姓」の情報ブロック
値リストへのポインタ
値リスト
1
0
1
佐藤
鈴木
田中
（あいうえお順）
②' 共有処理後の
「会員名」の情報ブロック
値リストへのポインタ
値リスト
0
3
1
一郎
大拙
ナオ樹
ヨサク
（あいうえお順）
⑥「人名テーブル」の「会員姓＋会員名」の情報ブロック
実在しない、仮想の値リスト
値リストへのポインタ
4
3
5
0 佐藤 一郎 0
1 佐藤 大拙 1
2 佐藤 ナオ樹 …
3 佐藤 ヨサク …
4 鈴木 一郎 …
5 鈴木 大拙 …
6 鈴木 ナオ樹 …
7 鈴木 ヨサク …
8 田中 一郎 …
9 田中 大拙 …
10 田中 ナオ樹 …
11 田中 ヨサク (p＊q－1)

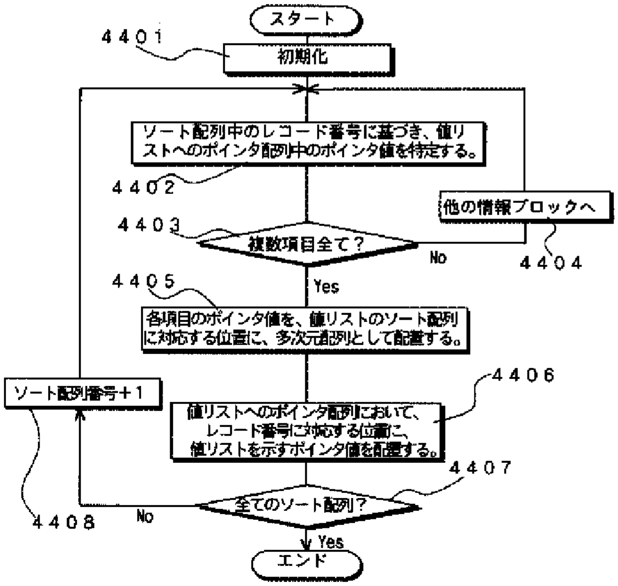
[Drawing 39]

図39


③
「年・会員姓」の情報ブロック
値リストへのポインタ
値リスト
0
1
1
2
佐藤
鈴木
田中
（あいうえお順）
p＝3
④
「年・会員名」の情報ブロック
値リストへのポインタ
値リスト
3
0
1
2
一郎
大拙
ナオ樹
ヨサク
（あいうえお順）
q＝4
⑤
「年齢」の情報ブロック
値リストへのポインタ
値リスト
1
0
3
2
22
30
48
88
⑦「年齢テーブル」の「年・会員姓＋年・会員名」の情報ブロック
実在しない、仮想の値リスト
値リストへのポインタ
3
4
5
10
0 佐藤 一郎 0
1 佐藤 大拙 1
2 佐藤 ナオ樹 …
3 佐藤 ヨサク …
4 鈴木 一郎 …
5 鈴木 大拙 …
6 鈴木 ナオ樹 …
7 鈴木 ヨサク …
8 田中 一郎 …
9 田中 大拙 …
10 田中 ナオ樹 …
11 田中 ヨサク (p＊q－1)

[Drawing 44]

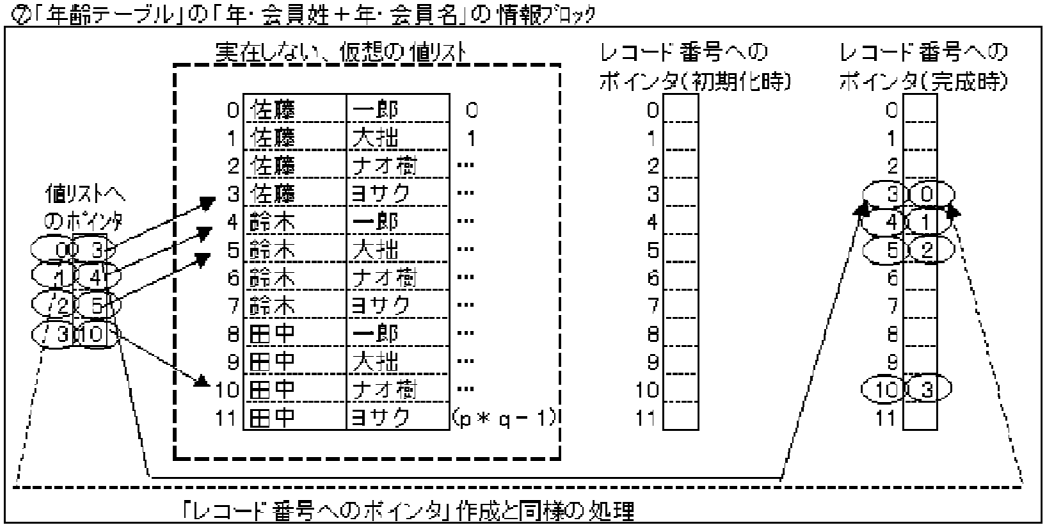
図４４


スタート
4401
初期化
ソート配列中のレコード番号に基づき、値リストへのポインタ配列中のポインタ値を特定する。
4402
他の情報ブロックへ
4403
複数項目全て？
No
4404
4405
Yes
各項目のポインタ値を、値リストのソート配列に対応する位置に、多次元配列として配置する。
4406
ソート配列番号＋１
値リストへのポインタ配列において、レコード番号に対応する位置に、値リストを示すポインタ値を配置する。
4407
全てのソート配列？
4408
No
Yes
エンド

[Drawing 40]

図40

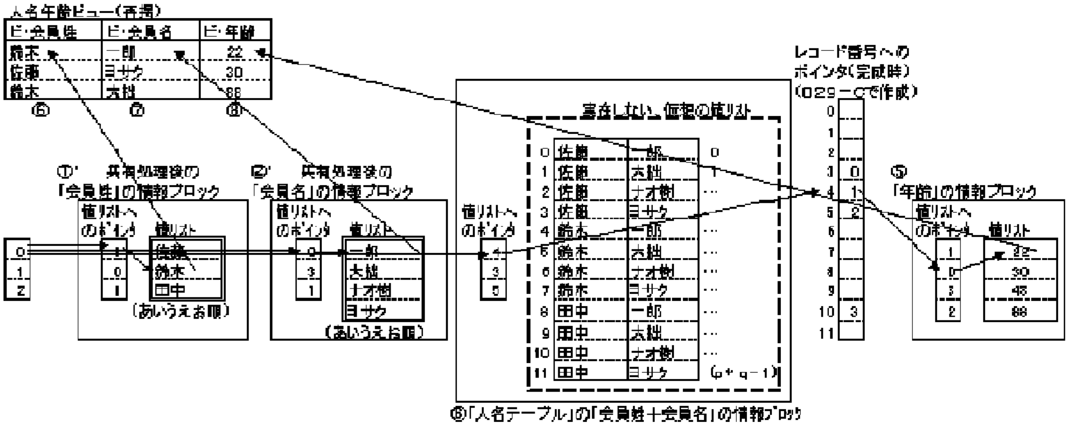
⑦「年齢テーブル」の「年・会員姓＋年・会員名」の 情報ﾌﾞﾛｯｸ


実在しない、仮想の値リスト
値リストへのポインタ
0 3
1 4
2 5
3 10
レコード番号へのポインタ(初期化時)
レコード番号へのポインタ(完成時)
3 0
4 1
5 2
10 3
「レコード番号へのポインタ」作成と同様の処理

0	佐藤	一郎	0
1	佐藤	大拙	1
2	佐藤	ナオ樹	…
3	佐藤	ヨサク	…
4	鈴木	一郎	…
5	鈴木	大拙	…
6	鈴木	ナオ樹	…
7	鈴木	ヨサク	…
8	田中	一郎	…
9	田中	大拙	…
10	田中	ナオ樹	…
11	田中	ヨサク	(p＊q－1)

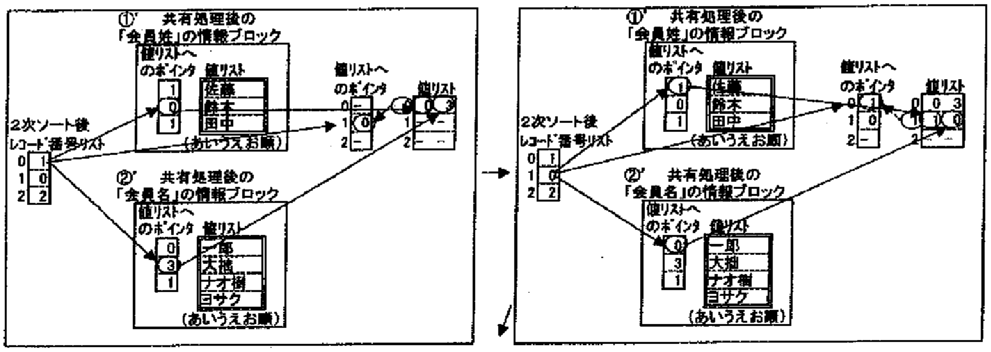
[Drawing 41]

図41


人名年齢ビュー（再掲）
ビ・会員姓
ビ・会員名
ビ・年齢
鈴木
佐藤
鈴木
一郎
ヨサク
大拙
22
30
88
⑥
⑦
⑧
①' 共有処理後の「会員姓」の情報ブロック
値リストへのポインタ
値リスト
佐藤
鈴木
田中
（あいうえお順）
②' 共有処理後の「会員名」の情報ブロック
一郎
大拙
ナオ樹
ヨサク
（あいうえお順）
実在しない、仮想の値リスト
（p＋q－1）
レコード番号へのポインタ（完成時）
（029－Cで作成）
⑤「年齢」の情報ブロック
45
⑥「人名テーブル」の「会員姓＋会員名」の情報ブロック

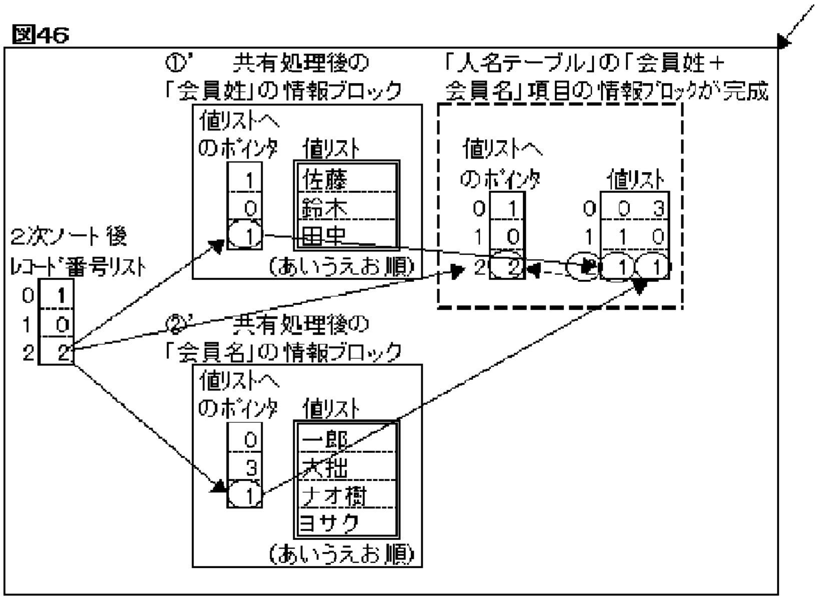
[Drawing 45]

図45


①' 共有処理後の「会員姓」の情報ブロック
値リストへのポインタ
値リスト
佐藤
鈴木
田中
（あいうえお順）
2次ソート後レコード番号リスト
②' 共有処理後の「会員名」の情報ブロック
一郎
大拙
ナオ樹
ヨサク
（あいうえお順）

[Drawing 46]

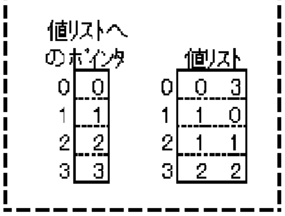
図46


①' 共有処理後の「会員姓」の情報ブロック
値リストへのポインタ
値リスト
佐藤
鈴木
田中
（あいうえお順）
「人名テーブル」の「会員姓＋会員名」項目の情報ブロックが完成
2次ソート後レコード番号リスト
②' 共有処理後の「会員名」の情報ブロック
一郎
大拙
ナオ樹
ヨサク
（あいうえお順）

[Drawing 47]

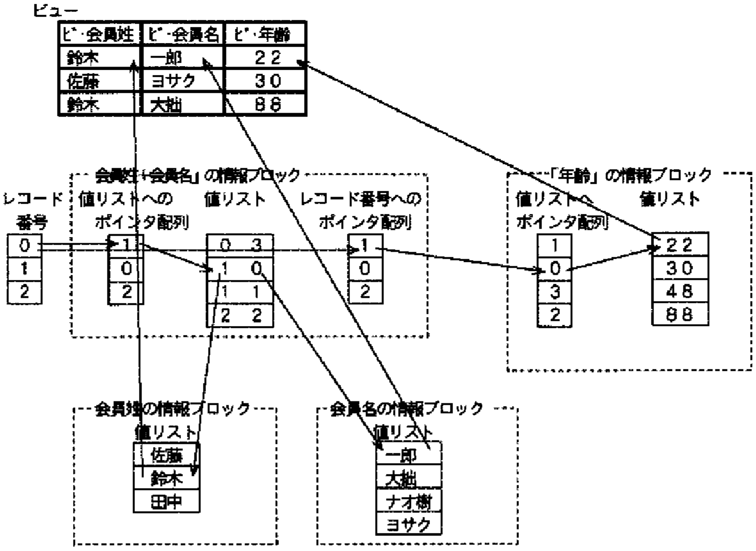
図47

「年齢テーブル」の「年・会員姓＋年・会員名」項目の情報ﾌﾞﾛｯｸ


値リストへのﾎﾟｲﾝﾀ
値リスト
0 0
1 1
2 2
3 3
0 0 3
1 1 0
2 1 1
3 2 2

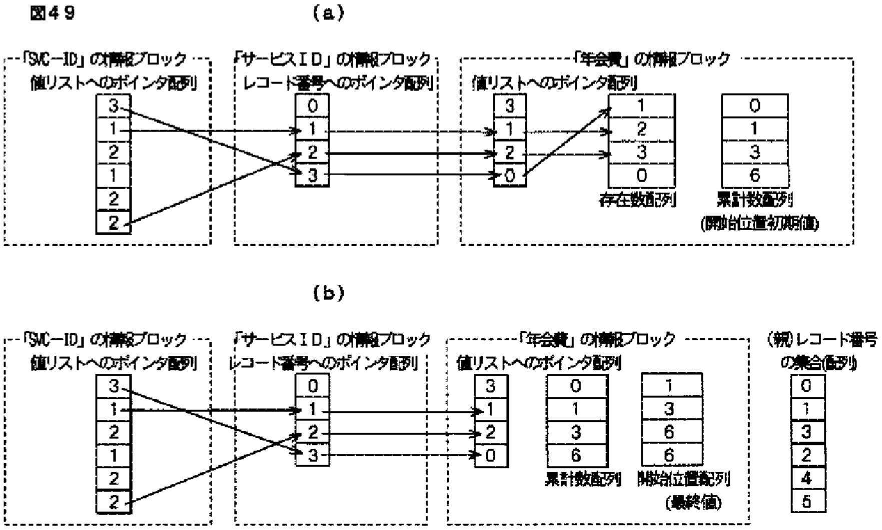
[Drawing 48]

図48


ビュー
ﾋﾞ・会員姓
ﾋﾞ・会員名
ﾋﾞ・年齢
鈴木
一郎
22
佐藤
ヨサク
30
鈴木
大拙
88
「会員姓＋会員名」の情報ブロック
レコード番号
値リストへのポインタ配列
値リスト
レコード番号へのポインタ配列
「年齢」の情報ブロック
値リストへポインタ配列
値リスト
22
30
48
88
会員姓の情報ブロック
値リスト
佐藤
鈴木
田中
会員名の情報ブロック
値リスト
一郎
大拙
ナオ樹
ヨサク

[Drawing 49]

図49


(a)

「SVC−ID」の情報ブロック
値リストへのポインタ配列
「サービスＩＤ」の情報ブロック
レコード番号へのポインタ配列
「年会費」の情報ブロック
値リストへのポインタ配列
存在数配列
累計数配列
(開始位置初期値)

(b)

「SVC−ID」の情報ブロック
値リストへのポインタ配列
「サービスＩＤ」の情報ブロック
レコード番号へのポインタ配列
「年会費」の情報ブロック
値リストへのポインタ配列
累計数配列
開始位置配列
(最終値)
(親)レコード番号
の集合配列

[Translation done.]